THE IRON TRADE REVIEW

Volume XLVI CLEVELAND, JANUARY 13, 1910 Number 2

READY TO BUY

IS THE ATTITUDE OF MANY CONSUMERS,

And Contracts for Finished Material Are Being Made Conservatively — Pig Iron More Active.

The post-holiday season has developed increased interest in practically all branches of the market. After the completion of inventories, many buyers have shown a disposition to renew placing of orders, and in fact, in many cases, have been more anxious to do so than the sellers were to take the orders, especially for delivery after the second quarter of the present year. It should be noted, however, that some of the eastern mills are reported not well supplied with orders for finished material, and shading of prices is being done, which is especially in evidence in the shape market. Some rail mills could take care of a considerably larger tonnage than they now have on their books.

Selling of Ore

The selling of non-Bessemer ore by the Lake Superior interests has continued at a lively rate, although eastern furnace interests are still manifesting no interest in Lake Superior ores. Nearly all consumers in the central west have placed orders for their requirements, or will soon do so. One large independent interest which is an increasingly important factor in the market, has sold a large tonnage during the past few days at the advanced rates. Lake freight rates on ore have been advanced 5 cents per ton over last year, the rate now being 70 cents from the head of the lakes, 65 cents from Marquette, and 55 cents from Escanaba. This is 5 cents below the rate for 1907, but the charge for handling at lower lake ports has been reduced 5 cents, so that the vessel interests will have the same net compensation as in 1907.

Pig Iron Improves

Much more general inquiry is being made for pig iron than for a number of weeks, and in the western territory sales of various grades, including very little steel-making iron, have amounted to 40,000 to 50,000 tons. An Ohio pipe interest has bought about 20,000 tons, of which 11,000 tons was reported last week. A New York state pipe interest has purchased 15,000 tons, and the leading pipe interests have been sounding the market in the central west. The leading pipe interest is inquiring for about 20,000 tons of various grades. Sales to a pipe interest in the Philadelphia district amounted to 5,000 tons. In the Chicago district there is good inquiry, especially for malleable. In the south, there is a better tone to the market, and sales of a fair tonnage are being made. Warrant iron has not yet entirely ceased to be a cause of trouble. There is a general scarcity in the south of the lower grades of pig iron, and in the north there is little change in quotations, although at Buffalo prices are about 50 cents higher.

Structural Material

The leading fabricator of structural material has carried over into the new year a very heavy tonnage of undelivered orders. There is a large amount of new work in prospect, especially in western districts. In the past week, the American Bridge Co. has taken orders for about 6,000 tons, while 37,000 tons were taken by competitors. The largest contract reported is 4,000 tons for the new plant of the American Rolling Mill Co., Middletown, O., awarded to the American Bridge Co. It is expected that the Virginia Bridge & Iron Co. will get the contract for 3,000 tons for the Cotton Exchange, Memphis.

Steel Bar Contracts

Many buyers of finished materials are showing a disposition to contract, and in some cases are offering to do so for considerably longer periods than are desired by the mills. Leading manufacturers of bolts and nuts have been sounding the market for steel bars, and the 1.50c price seems to be firmly maintained in the central west, but there are reports of 1.45c still being quoted in territory farther west.

Sheet and Tin Plate

The prosperity of the sheet and tin plate business continues. In view of the fact that a stubborn strike has been in progress against the leading interest, the tremendous output of sheets and tin plate is surprising. Shipments of tin plate last year were the heaviest in the history of the industry in this country, and the large production of the year found ready demand, some makers now being sold up to July 1. Some manufacturers of sheets state that business taken during the past six months has been extremely heavy. Premium prices for prompt shipment are still being paid.

Crude Steel

Steel manufacturers in the Pittsburg district have within a few days placed orders for open-hearth billets amounting to from 25,000 to 30,000 tons. This grade of crude steel is scarce, and the prevailing price is about $30. Pittsburg. The Bessemer grade is somewhat easier. The sheet bar market is quiet.

PUDDLERS' WAGES UNCHANGED.

Pittsburg, Jan. 12. (By wire.)

The bi-monthly wage settlement made at Pittsburg Wednesday disclosed a 1.40c bar iron price, netting a puddling rate of $5.50 per ton for the months of January and February, which was the same as during the months of November and December.

THE WEEK IN IRON CENTERS

PITTSBURG.

Good Business in Finished Products—Pig Iron is Quiet.

Office of THE IRON TRADE REVIEW,
510 Park Building, Jan. 11.

The iron and steel business is giving a good account of itself for so early in the new year. While there has been the usual falling off of new demand in the shaping up by the trade of affairs for the period ahead, specifications against running contracts have continued in a very fair volume, evidencing but little change in the absorbing power of the market. Prospects for fresh contracting in the near future are favorable according to the sentiments of sales representatives of leading steel companies expressed at their annual conventions held in Pittsburg the past week.

In finished lines, encouragement is to be found in the state of the steel bar market, in which the influence of the expiration of low-priced contracts, Jan. 1, was rather expected to effect a marked decline in orders entered at the higher ruling quotations. While January specifications to date are of a less comparative volume than December, they are large enough to be very satisfying and in some cases are reported to be at a rate of full output.

The sheet and tin plate situation continues eminently satisfactory. Some makers fully sold up for six months, have already entered specifications to their maximum tonnage for one-half this period. The piling of finished stock by sheet and tin plate mills, which usually follows in January and February, is likely to be less extensive this year, since consumers are taking in shipments very promptly. It is declared by leading tin plate makers that total shipments of this product in 1909 probably surpassed those of any other year in the history of this industry.

The action of the H. C. Frick Coke Co. in the week in announcing a restoration of wages to the level prevailing before the cut of Jan. 1, 1908, occasioned little surprise in the market, as it had been anticipated. The independent operators are rapidly adopting the increased scales of the company.

In the Pittsburg district some interruption of full operations of steel plants, is being caused by a shortage of natural gas. The curtailment of the output of open-hearth departments resulting from this factor, has likely had a bearing upon the action of some large steel makers in entering the market in that territory and purchasing round tonnages of open-hearth steel.

Pig Iron.—Buying activity in practically all grades of pig iron in the Pittsburg district is of the unimportant order. Prices are fairly stationary under the limited trading.

The only sale of note of the week is that of a local valve and piping plant for 2,000 tons of No. 2 foundry, 1,000 tons for first half at a basis of $17.50, valley, and 1,000 tons for first quarter at slightly higher than $17.25 valley. A recent sale of 300 tons of prompt malleable to a western buyer at $17.25, valley, is reported.

Some basic inquiry is still under negotiation. A local steel company is considering the purchase of 1,000 tons for February or 1,000 tons monthly up to June. A report in the market that shipments of basic are being made by some furnaces to the new open-hearth plant of the Forged Steel Wheel Co., at Butler, Pa., now under construction, proves to be unfounded. A number of months ago this company inquired for a large block of basic, but as far as known made no purchases. The new open-hearth furnaces will scarcely be in operation before the middle of the year. The Bessemer market is stagnant.

Consumers are still showing interest in low phosphorus pig iron. A large steel company of this district is asking prices upon 1,000 tons for prompt and an Ohio foundry is in the market for 1,200 tons. It is understood an eastern steel interest which was inquiring for a large block of standard grades for first half was obliged to pay higher prices for the metal than it had anticipated.

The southern foundry situation is reported to be a little more promising and sales made by leading makers the past week have been heavier than for some time. Makers are becoming more reluctant to take on much additional tonnage at the $14, Birmingham, price for future shipment.

Furnace activities in the valleys will be increased by the resumption of the Fannie furnace at West Middlesex about Jan. 30. This stack has been out for relining. The new furnace of Corrigan, McKinney & Co., at Cleveland, will blow in early in February.

For prompt and first quarter shipment on northern iron, we quote as follows:

Bessemer, valley	$ 19.00
Bessemer, Pittsburg	19.90
No. 2 foundry, Pittsburg	17.00 to 17.35
Gray Forge, Pittsburg	17.15 to 17.40
Basic, valley	17.00 to 17.25
Basic, Pittsburg	17.90 to 18.15

Iron Ore.—Pittsburg ore interests have sold upwards of 600,000 tons of Mesabi Bessemer at $4.75 a ton and Mesabi non-Bessemer at $4.00 a ton, the new prices. Of the total sales, approximately 500,000 tons were of the Bessemer grade. The active contracting in this market has pretty well cleaned up the situation as far as local interests are concerned, and this is especially true with regard to Bessemer ore.

Ferro-Alloys.—Transactions in the ferro-alloy market are rather few and prices as quoted are practically stationary. Carload sales of prompt ferro-manganese at $44.50, Baltimore, are noted. Some carload sales of the lower grades of ferro-silicon at prices slightly in advance of those quoted are reported. A large western buyer is in the market for from 500 to 600 tons of 50 per cent ferro-silicon for shipment over the entire year.

We quote ferro-manganese at $44.50 to $45, Baltimore, for immediate shipment or for first half, and from $45 to $45.50 for second half. The freight from Baltimore to Pittsburg is $2.30.

Fifty per cent ferro-silicon is quoted at $62 to $63, Pittsburg; domestic 12 per cent, $25.90; 11 per cent, $24.90; 10 per cent, $23.90, Pittsburg, for prompt, first quarter and $1 advance for second quarter. The foreign grades are held at $1 or more a ton over domestic prices.

Plates.—Pending car orders which are actually being figured upon by builders are estimated to be 20,000. Of this number, The Norfolk & Western is contemplating the purchase of 2,500 to 3,000 cars, and the Chesapeake & Ohio about 2,500 cars. New business in plates has been rather quiet since the first of the year, but makers continue to enter a large volume of specifications. The line pipe situation, especially as to large oil interests, is less active than is usually the case at this period of the year. Makers, however, have such a large tonnage upon their books that the temporary lull in the market is causing little concern. Reports of some shading of prices by eastern mills are

current. We quote present trade prices as follows:

Tank plates, ¼-inch thick, 6¼ to 100 inches, 1.55c to 1.60c. Extras are as follows, per 100 pounds: Boiler and flange steel plate, 0.10c; A. B. M. A. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.20c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches, excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end not being less than 30 inches, 0.10c; circles, 0.20c. Plates in widths over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ½-inch to and including 3/16-inch plate on thin edge, 0.10c; under 3/16 to and including No. 9, 0.25c. Five cents extra for less than carloads. Terms, net cash in 30 days.

Sheets.—With possibly one or two exceptions, all the sheet makers have sold up their outputs largely for the first quarter and are now receiving very liberal specifications against contracts. Considerable new business is regularly coming out, but some leading makers find themselves so obligated by the volume of contracts taken that they are declining new bookings. Some makers report that business entered during the past six months has equaled the total tonnage of preceding full years. The relative gain in November and December orders has been especially large. Some independents are promising shipments on both iron and steel sheets in from five to six weeks, but a number of the sheet plants are unable to duplicate such deliveries. Premium prices for prompt shipment are still reported. We quote present sheet prices as follows:

Blue annealed sheets, Nos. 3 to 8, 1.70c; Nos. 9 and 10, 1.75c; Nos. 11 and 12, 1.80c; Nos. 13 and 14, 1.85c; Nos. 15 and 16, 1.95c; box annealed sheets, Nos. 10 and 12, 2.05c; Nos. 13 and 14, 2.10c; Nos. 16 and 16, 2.15c; Nos. 17 to 21, 2.20c; Nos. 22 to 24, 2.25c; Nos. 25 and 26, 2.30c; No. 27, 2.35c; No. 28, 2.40c; No. 29, 2.45c; No. 30, 2.55c; galvanized sheets, Nos. 12 to 14, 2.50c to 2.55c; Nos. 15 and 16, 2.60c to 2.65c; Nos. 17 to 21, 2.75c; Nos. 22 to 24, 2.90c; Nos. 25 and 26, 3.10c; No. 27, 3.30c; No. 28, 3.50c; No. 29, 3.60c; No. 30, 3.85c; painted roofing sheets, $1.70 per square for No. 28 gage, 2½-inch corrugation, and galvanized roofing sheets, $3 per square for No. 28 gage, 2½-inch corrugation.

Tin Plate.—Makers of tin plate state that shipments of this product during 1909 were the heaviest in the history of the industry in the United States. Some heavy stocks were on hand at the beginning of the year, and these were absorbed by the trade along with the current production, which in some quarters, however, was curtailed by labor difficulties. It is believed, nevertheless, that the year will show a large production which may exceed that of 1906, a period of highest output in history. Some makers of tin plate are sold up to July 1 and have already received specifications upon probably one-half of these obligations. This condition of sold up capacity of some makers is leading to the rejection of some offered business and to the reports of premiums on quick shipment material which appears well founded in view of prevailing conditions. The American Sheet & Tin Plate Co. increased its operations this week by three mills to the total of 179 mills. Tin plate prices are absolutely firm, and we quote as follows:

Coke tin plate, 100-pound basis, 14 x 20, $3.60 f. o. b. mill, Pittsburg district.

Rails and Track Material.—No large contracts in standard rails are announced, although there is considerable tonnage under negotiation. The Carnegie Steel Co. during the week booked 6,500 tons of standard sections in new business, of which 5,000 tons were for one road. About 2,000 tons of light rails were taken. The spike market is rather quiet as to standards, but there is an active demand for the small product. Reports of concessions in spike prices are still current in the market. We quote standard Bessemer rails as follows, the base price for open-hearth being $30 mill.

Fifty-pound and heavier, 500-ton lots and over, $28; carloads and less than 500 tons, $30; less than carload lots, $32; light rails on base weight of 40 to 45 pounds, $28, the schedule on the other weights being irregular and subject to negotiations; angle splice bars for standard sections, 1.50c, Pittsburg; standard spikes, 1.80c to 1.85c, Pittsburg; hand spikes, 1.80c to 1.90c, Pittsburg.

Steel.—The principal development of the steel situation has been the buying of billets by large steel makers in this district to supplement their own outputs. The extent of this buying has been variously estimated and it is reported to have reached a large figure, probably 25,000 to 30,000 tons. Two large interests have been the leading buyers. The steel purchased has been of the open-hearth grade, which is rather scarce and the prices paid have been about $30, Pittsburg, for 4 x 4 billets. One local maker of finished lines also bought 1,500 tons of 4 x 4 open-hearth billets for first quarter at about $30, Pittsburg. Some makers of open-hearth steel are declining to quote at all. The Bessemer steel market shows an easier condition than open-hearth, but prices for this grade are also strong. Bessemer sheet bars appear more easily procurable than open-hearth. The sheet bar market is rather quiet at present as to new buying, for the leading consumers in this district report themselves to be covered on their first quarter needs. Specifications for January sheet bars have not been as liberal as in other months and, while sheet and tin plate plants normally run lightest in January and February, it is reported that some mills have accumulated a considerable tonnage of bars over their needs to guard against possible shortages. The general price of sheet bars is $29 at makers' mill, although $28.50 has been done to regular customers.

Bessemer 4 x 4 billets with 0.25 carbon and less are quoted at $28 to $28.50, Pittsburg, with the usual extras for size and analysis, and open-hearth rolling billets from $30 to $30.50, Pittsburg. Forging billets are quotable at $32 to $33, Pittsburg. Sheet and tin bars are quoted at $28.50 to $29 at makers' mill, located within the $1 Pittsburg freight limits.

Hoops and Bands.—Buyers of hoops who have recently come into the market have been unable to obtain a lower minimum price than 1.60c, Pittsburg, and in some cases were quoted as high as 1.75c. Makers report having made recent sales at 1.65c and even 1.70c. Some of the hoop plants are sold up several months ahead. There is a good offering of new business from the cooperage trade and specifications are running freely. The absolute minimum of band prices is reported to be 1.50c Pittsburg. We quote the present market as follows:

Hoops in carload lots, 1.60c to 1.65c; in less than carload lots, 1.70c to 1.75c; bands, 1.50c to 1.55c, base, with net extras as per standard steel.

Merchant Bars.—While the new year has scarcely advanced sufficiently to gain a clear idea of the probable extent of specifying after Jan. 1, the movement to date has been very gratifying to makers. Buyers are still ordering quite freely against running contracts, a number of which dating from Jan. 1, provide higher prices. The volume of tonnage being entered for shipment on mill books at the better price advantage

to makers is extremely good, although not as large as in December. Steel bar makers state that the cancellations of unspecified tonnage on contracts expiring the first of the year were comparatively light, as buyers did not overlook their opportunity to avail themselves of this tonnage at the lower prices fixed. There is considerable new steel bar business going, particularly for second quarter. The 1.50c price is reasonably firm in Pittsburg territory, but in the western districts it is reported that the 1.45c quotation is still being made in preferred cases. Bar iron market is rather quiet at 1.70c, Pittsburg, with about 1.57½c being done at western centers. Shafting conditions are good and discounts are being maintained. There is an active demand for cold stripped steel and prices are on the advance. We quote the market as follows:

Common iron bars, 1.70c to 1.75c, Pittsburg; Bessemer and open-hearth steel bars, 1.50c to 1.55c; plow and cultivator, 1.50c to 1.55c; channels, angles, zees, tees, under 3-inch, 1.60c to 1.65c, all f. o. b. mill. The following differentials are maintained on steel: Less than 2,000 pounds, 0.15c advance; less than 1,000 pounds of a size, 0.35c advance. Cold rolled and ground shafting, 55 per cent in carloads and 50 per cent in less than carboads, delivered in base territory.

Planished and machine straightened tire is 1.70c base; iron finished tire under 1½ by 1½ inches, 1.65c, both plus net extra on tire card; iron finished tire, 1½ by ½ and over, 1.50c, plus net extra on the steel bar card.

On cold rolled strip steel, width 1½ inches and wider, and 0.100-inch and thicker, we quote base prices for 100 pounds, $3.35 on hard, and $3.60 on soft, except in carload lots of one size, where the price is lower.

Structural Material.—The leading fabricating interest has entered the new year with a very heavy aggregate of undelivered tonnage upon its books, which is considerably larger than that on hand on the corresponding date one year ago. There is a considerable amount of new work in sight, particularly in the western districts about St. Louis or Chicago, but prospective tonnage in Pittsburg territory is not noteworthy. Fabricators are still encountering cases of low prices being bid, which are due to a variety of causes including sometimes a need of work for shops and favorable plain shape contracts. The Lackawanna Bridge Co. has taken 450 tons for new buildings for the Buffalo Foundry & Machine Co., Buffalo, and the American Bridge Co., 230 tons for a plate girder bridge at West End avenue, in this city, for the Pittsburg & Lake Erie railroad. Bids will be taken at Philadelphia Jan. 19 on 500 tons for the 18th Regiment armory of this city. Shading of plain shape prices on attractive tonnages in the east is being done. We quote present shape prices as follows:

Beams and channels, 15-inch and under, 1.55c to 1.60c; over 15 inches, 1.65c to 1.70c; zees, 1.55c to 1.60c; tees, 1.55c to 1.60c; angles, from 3 to 6 inches, 1.55c to 1.60c; over 6 inches, 1.55c to 1.70c; universal and sheared plates, 6¼ inches wide and wider, 1.55c to 1.60c.

Merchant Pipe.—The Arkansas Natural Gas Co. has taken preliminary figures upon its proposed line in Arkansas, which will require about 100 miles of 16 or 18-inch pipe and about 100 miles of 12-inch and smaller sizes. This project is probably the most advanced of any of the larger lines pending and it is expected to be put through in due season. There is a good shipping movement of pipe to jobbers, but the specifying activity at present is not so pronounced, partly because some heavy stocks are being carried and partly because of the normal seasonable quietness. Greater activity in specifying is expected after Jan. 15 for shipment through February. We quote the following official discounts on card weight pipe in carload lots, subject to the usual additional discounts to the largest buyers, merchant weight pipe where specified being furnished from ⅛ to 6 inches and in plugged and reamed lots:

	—Steel—		—Iron—	
	Black.	Galv.	Black.	Galv.
⅛ and ¼ inch.....	70	54	63	..
⅜ inch	71	57	66	52
½ inch	74	62	69	57
¾ to 6 inch	78	68	73	63
7 to 12 inch.....	72	57	67	52
13 to 15 inch	51½	..	..	..
PLUGGED AND REAMED.				
1 to 4 inch	76	66	71	61
EXTRA STRONG PLAIN ENDS.				
⅛ to ⅜ inch.....	63	51	58	46
½ to 4 inch	70	58	65	53
4½ to 8 inch	66	54	61	49
9, 10, 11 and 12 inch	59	47	54	42
DOUBLE EXTRA STRONG PLAIN ENDS.				
½ to 8 inch	59	48	54	43

Boiler Tubes.—The gradual increase in boiler tube demand is being sustained and the market is now in a very fair state of activity. Business entered has grown regularly from week to week, as new power construction and locomotive building has become more extended, although occasionally there is sharp competition for orders bringing concessions. The following official discounts on boiler tubes to the largest buyers are being fairly maintained.

	Steel.	Iron.
1 to 1½ inch	49	43
1¾ to 1¼ inch.....	61	43
2½ inch	63	48
2¾ to 5 inch.....	69	55
6 to 13 inch	60	43

2½ inch and smaller, over 18 feet, 10 per cent net extra.

2¾ inch and larger, over 22 feet, 10 per cent net extra.

To destinations east of the Mississippi river will be sold at delivered discount for carloads lowered by two points, for lengths 22 feet and under; longer lengths, f. o. b. Pittsburg.

Wire Products.—Some of the smaller jobbers have been more freely placing 60-day contracts for nails and wire and the general condition of the market is one of quietness with optimistic expectations for the spring trade. Many of the jobbers are in favorable positions on stocks. The market hears reports of some irregularity in nail and wire prices. We quote the market as follows, contracts with the jobbing trade being limited usually to 60 days.

Wire nails, jobbers' carload lots, $1.85; retailers' carload lots, $1.90; painted barb wire, jobbers' carload lots, $1.85; retailers' carload lots, $1.90; with 30c for galvanizing; plain wire to jobbers in carloads, $1.65, and to dealers in carloads, $1.70; polished staples, $1.85; galvanized staples, $2.15.

Wire Rods.—Consumers are paying some extremely high prices for Bessemer rods for prompt shipment because of makers' reluctance to part with their steel. Most of the rod buyers in this territory are well covered. We quote the market at $33 and $34, Pittsburg, on Bessemer and open-hearth rods.

Coke.—The market is so quiet that its strength is a matter of speculation, because there is scarcely enough business going to indicate the trend of prices. The market is, however, showing little evidence of any forcing on the part of the operators and on contracts considerable firmness is manifested. There are frequent reports of extreme softness in the market, but where these have been authenticated, they have usually applied to grades other than strictly standard coke. The contracting movement in furnace coke for first half appears to have been practically concluded, although there are several furnaces about to go in which have not covered. Curtailment of operations through different causes have forced some furnaces into the market for spot lots. A Cleveland furnace took 3,000 tons for January at $2.75, ovens, to the purchaser. A merchant interest bought a lot of standard Connellsville grade for immediate shipment at $2.70, ovens. Foundry coke is easier under the very light demand and reports of selling of good grades at $3.00, ovens, are noted. The advance of wages by the H. C. Frick Coke Co., which has been followed by the independent operators, had been anticipated and has had little effect upon the market. We quote standard Connellsville furnace coke at from $2.60 to $2.75, ovens, and on contract at from $2.75 to 2.80, ovens. On first grade Connellsville foundry coke we quote from $3.05 to $3.15, ovens, for prompt, and from $3.25 to $3.35, ovens, on contract. *The Courier's* figures for the week ending Jan. 1 show 36,272 ovens active with an output of 449,082

tons compared with 35,711 active ovens and a production of 374,544 tons the previous week.

Old Material.—The scrap market is very dull with a weak tone as indicated by the few sales being put through which are largely of the forced variety where dealers are obliged to move lots. Some dealers are showing less optimism as to price advances and are more disposed to cut down the tonnage now in their yards. The large buyers in this territory are in secure positions as to their near future needs and are giving the market no support in the way of buying. Bundled sheet scrap is very weak and sales at $15, delivered, are reported. Some dealers are declining to pay more than $17.50, delivered, for heavy steel. Wrought scrap at $19, delivered, and cast at $16.50, delivered, are representative, but lower prices on No. 1 cast are reported. Borings and turnings are very dull. We quote gross tons, delivered, in the Pittsburg district, including Monessen, Sharon, Brackenridge, Steubenville and Follansbee, as follows:

Heavy melting scrap	$17.75 to 18.00
Rerolling rails	18.50 to 19.00
Bundled sheet scrap	15.50 to 16.00
Iron axles	27.00 to 27.50
Old iron rails	19.50 to 20.00
No. 1 wrought scrap	19.00 to 19.25
Old car wheels	17.00 to 17.50
Low phosphorus	22.00 to 22.50
Machine shop turnings	13.00 to 13.50
Cast borings	10.75 to 11.25
No. 1 cast scrap	16.50 to 17.00
Malleable	16.50 to 17.00
Stove plate	14.00 to 14.50

CHICAGO.

Southern Pig Iron Market Leads in New Year Improvement.

Office of THE IRON TRADE REVIEW,
1328 Monadnock Block, Jan. 11.

Less than ten business days of the new year have passed, and yet the feeling has become established that there is to be a continual progress toward even better things than 1909 produced. The southern pig iron market was the weak spot at the close of the year, and it is that direction from which come the first signs of renewed activity. This might be misleading, were it not that the fact is so well known that the other lines,—or most of them,—needed no increase in activity to make their condition very satisfactory. But, in the case of pig iron, there was some anxiety because of the long-continued quiet, so that it is all the more gratifying to discern the signs of returning business activity, and this is bound to react upon the other lines. Structural material continues to command attention, and there are a number of projects on paper, which, if carried out, will mean a very good tonnage to be figured on by fabricating interests. Steel rails have been taken freely by the Harriman system, and track fastenings also have been in request. All other lines report good-sized orders and inquiries.

Pig Iron.—There is a very fair inquiry for iron, in the local market, the larger part of which is for malleable, amounting to 6,000 tons or over. Among the inquiries this week are Union Malleable Iron Co., of Moline, 2,000 to 4,000 tons, depending upon the time of delivery, whether third quarter or third and fourth, the larger tonnage going with the half-year specification; and the Illinois Malleable Iron Co., 1,000 to 2,000 tons. The Crane Co. is in the market for 1,000 tons—500 malleable and 500 southern foundry. The Clow Co.'s purchases amounted to about 20,000 tons. Some of the off-grade iron included in the purchase is said to have been secured at $13.25, Birmingham. A fraction of the inquiry for southern iron is said to be for the purpose of securing a basis upon which to figure inventories, but the total of this sort of inquiry probably is not large.

Lake Superior charcoal	$19.50 to 20.00
Northern foundry No. 2	19.00 to 19.50
Southern foundry No. 2	18.35 to 18.85
Southern silveries, 5 per cent silicon	19.40 to 19.90
Jackson Co. silveries, 8 per cent.	22.40 to 22.90
Malleable Bessemer	19.00 to 19.50
Alabama basic	19.35 to 19.85

Billets.—The market for billets remains in the same peculiar condition as for several months. The only relief in sight, in the way of new source of supply, is somewhat remote, and will be a partial relief only, if any. This will be when the Inland Steel Co. gets its two new open-hearth furnaces in operation, next spring or summer.

Merchant Bars.—New business is coming in at a very satisfactory rate. There is no tendency in this market to make any concessions for orders, as the business comes along without much pressure from sales departments. Car orders have not been heavy or numerous for a while, but one for 2,000 steel-underframe refrigerator cars, for the Harriman lines, was placed with the Pullman Co. Implement makers are much interested in the market, and a number of them have found that they did not contract for as much material as they needed. In some cases, extensions of contracts have been granted, and in others, new contracts were made.

We quote, as follows:

Bar iron, 1.60c to 1.65c; hard steel bars, re-rolled, 1.60c to 1.65c; soft steel bars and bands and small shapes, 1.68c to 1.78c base; hoops, 1.78c to 1.88c; planished or smooth finished tire steel, 1.88c to 1.93c; iron finish, up to 1½ x ½ inch, 1.83c base, tire card; iron finish, 1½ x ½ inch and larger, 1.68c, base, bar card; channel for solid rubber tires, ¾ to 1 inch, 2.18c, flat, and 1⅛ inches and larger, 2.08c, flat; smooth finished machinery steel, 1 inch and larger, 2.43c; flat sleigh shoe, 1.73c; toe calk steel, 2.23c; spring steel, 2.28c; crucible spring steel, 2.78c; tool steel, 7c to 9c, with higher prices for special grades. Quotations on shafting are 55 per cent off the list for carload lots, and 50 per cent off for less than carload lots, carload freight allowed to points in base territory.

On iron and steel bars from local stocks, we quote, as follows: Bar iron, 2c to 2.10c, base; soft steel bars, 1.90c to 2c per 100 pounds, base; soft steel hoops, 2.40c to 2.50c, full extras.

Plates.—Specifications received by the mills in the past week have been very good, and there has been a quantity of new business which totals up to a very fair tonnage. Orders now on hand will keep the plate mills busy for many weeks, so that no anxiety is being manifested over the question of making further sales.

We quote, Chicago delivery, as follows: Tank plates, ¼ inch thick, 6¼ to 100 inches, 1.78c to 1.88c. For extras see Pittsburg report.

Store quotations are without change as follows: Tank steel, ¼ inch and heavier up to 72 inches wide, 2c to 2.10c; from 72 inches to 96 inches wide, 2.10c to 2.20c; 3/16 inch up to and including 60 inches wide, 2.10c to 2.20c; 72 inches, 2.35c to 2.45c; No. 8 up to 60 inches wide, 2.15c to 2.25c. Flange and head quality, 25c extra.

Sheets.—Although present business in hand is sufficient to provide rolling for the sheet mills for at least two months, new business is heavy, and the inquiry also is brisk. The latter is for nearby delivery, showing that the consumers have immediate need for their material. Prices show no change.

For mill prices see Pittsburg report. Freight to Chicago, 18 cents.

We quote store prices at Chicago as follows: No. 10, 2.25c to 2.35c; No. 12, 2.30c to 2.40c; No. 14, 2.35c to 2.45c; No. 16, 2.45c to 2.55c; Nos. 18-20, 2.80c to 2.90c; Nos. 22-24, 2.85c to 2.95c; No. 26, 2.90c to 3c; No. 27, 2.95c to 3.05c; No. 28, 3c to 3.10c; No. 30, 3.30c; galvanized sheets, Nos. 10 and 16, 3.20c to 3.30c; Nos. 18 and 20, 3.35c to 3.45c; Nos. 22 to 24, 3.50c to 3.60c; No. 26, 3.50c to 3.80c;

No. 27, 3.90c to 4c; No. 28, 4.10c to 4.20c; No. 30, 4.50c to 4.60c.

Structural Material.—Structural mills find it impossible to accept much of the business which is being offered, owing to the familiar fact that they are over-crowded with orders, which it will take months to fill. Contracts for new buildings, during the past week, have not been numerous or heavy. Local projects are appearing on paper which will require many hundreds of tons of steel, and out of the number of proposed buildings, etc., which now are receiving attention, a number probably will find their way to actual consummation. The American Bridge Co. secured the contract for the buildings of the American Rolling Mill Co., 4,000 tons, at Middletown, O.; F. O. Brown, of Denver, has the contract for the Denver Omnibus & Garage Co.'s stables and garage, 355 tons; Bethlehem shapes have been specified for the 500 tons of steel for the Plew building, this city, but the contract has not yet been let; the Gaiety theater, also in this city, will require 900 tons, which will be furnished by the Brown-Ketcham Iron Works, of Indianapolis. The American Steel Foundries has let the contract for additions to buildings at Granite City and East St. Louis, 160 tons, to the Kenwood Bridge Co.; the same interest awarded the contract for 340 tons for a new plant at Indiana Harbor, to the McClintic-Marshall Construction Co.

We quote mill prices for structural shapes, Chicago delivery, as follows:

Beams and channels, 15-inch and under, 1.78c to 1.88c. For extras see Pittsburg report.

Local store prices are as follows: All angles, 3 inches and larger including 6 inches, $2 to $2.10 per 100 pounds; angles over 6 inches, $2.10 to $2.20 per 100 pounds base; beams, 3 to 15 inches, inclusive, $2 per 100 pounds base; channels, 3 inches and larger, $2 per 100 pounds base.

Rails and Track Supplies.—Sales amounting to 36,000 tons of standard rails were made by the local interest, during the past week, the greater part of which were open hearth, for the Harriman lines. The remainder were scattering sales of small quantities of Bessemer rails. Specifications for track fastenings have been heavy. Prices are unchanged, except on bolts, which are higher.

See Pittsburg report for prices on standard sections.

On light rails, Chicago delivery, we quote as follows: Light rails, 40 and 45-pound, $26.30, and 35-pound, $26.75, 16, 20 and 25-pound, $27; 12-pound, $28. In lots of 250 and 500 tons a reduction of 60c a ton from these prices is made; lots of 500 tons and up carry a reduction of $1 a ton. Track supplies, f. o. b. Joliet, angle bars, 1.50c to 1.60c; railroad spikes, 1.80c to 1.90c; smaller size spikes, 1.85c to 1.90c, base; track bolts with square nuts, 2.40c to 2.60c, base; with hexagon nuts, 2.55c to 2.75c.

Wire Products.—Demand for wire and its products has been large, in the past week, being distributed between manufacturers and jobbers. Prices remain at previously quoted points.

We quote, Chicago delivery, as follows: Wire nails, jobbers' carload lots, $2.03; retailers' carload lots, $2.08; retailers' less than carload lots, $2.18; painted barb wire, jobbers' carload lots, $2.03; retailers' carload lots, $2.08; retailers' less than carload lots, $2.18; with 30c for galvanizing; plain wire to jobbers, carload lots, $1.83; staples, bright, $2.03.

Wrought Iron Pipe.—Business in pipe and tubes is of a seasonable character, both from mill and store. Discounts on material from the latter have been advanced on pipe from 7-inch to 12-inch, on the new list, and also on seamless steel tubes.

For mill discounts, see Pittsburg report.

We quote, out of store, as follows: Wrought steel pipe, black ⅛-inch to ¼-inch, 68 per cent; ⅜-inch, 69 per cent; ½-inch, 72 per cent; ¾-inch to 6-inch, 76 per cent; 7-inch to 12-inch, 68 per cent. Iron pipe about 6 points higher.

Lap-welded steel tubes, 2¼-inch to 5-inch, 60 to 62 per cent; charcoal iron tubes, 2¼-inch to 4-inch, 48 to 50 per cent; seamless steel tubes, 2¼-inch to 4-inch, 46 per cent.

Cast Iron Pipe.—Nothing more than routine business is transpiring in this branch of the iron business, but the hope is entertained that the expected inquiries for spring business will not be much longer delayed. Prices remain at the same level as for several weeks.

We quote as follows: 4-inch water pipe, $28.50; 6 to 16 inches, $27.50; larger sizes, $26.50; gas pipe, $1 a ton higher.

Old Material.—The market is extremely quiet, and while there has been no decline in prices, the market is no stronger than at last report, when it was a case of who should make the concession, it all depending on who made the first move. The feeling in cast scrap is somewhat stronger, in sympathy with the improved tone in the pig iron market, and also from a larger local demand.

We quote, gross tons, as follows:

Old car wheels	$18.00 to 18.50
Old iron rails	19.50 to 20.00
Rerolling rails (4 ft. and over)	17.75 to 18.25
Old steel rails (2 ft. and under)	17.00 to 17.50
Light section relayers, 45 lbs. and under, subject to inspection	21.00 to 23.00
Relaying rails, subject to inspection	24.50 to 25.00
Frogs, switches and guards	16.00 to 16.50
Heavy melting steel	16.00 to 16.50
Shoveling steel	15.00 to 15.50

We quote, net tons, as follows:

No. 1 R. R. wrought	$14.75 to 15.25
No. 2 R. R. wrought	13.75 to 14.25
Arch bars and transoms	17.75 to 18.25
Knuckles, couplers and springs	14.25 to 14.75
Shafting	17.50 to 18.00
Iron car axles	21.25 to 21.75
Steel car axles	20.50 to 21.00
Locomotive tires	18.00 to 18.50
Dealers' forge	12.25 to 12.75
Pipes and flues	11.25 to 11.75
No. 1 cast 150 lbs. and less	14.50 to 15.00
No. 1 busheling	12.75 to 13.25
No. 2 busheling	9.50 to 10.00
No. 1 boiler cut	11.25 to 11.75
Boiler punchings	16.00 to 16.50
Cast and mixed borings	7.50 to 8.00
Machine shop turnings	10.50 to 11.00
Railroad malleable	15.00 to 15.50
Agricultural malleable	13.25 to 13.75
Stove plate and light cast scrap	12.25 to 12.75
Angle bars, splices, etc. (iron)	17.25 to 17.75
Angle bars, steel	15.50 to 16.00

CLEVELAND.

Selling of Ore Continues at Recent Advance in Prices.

Office of THE IRON TRADE REVIEW,
Browning Building, Jan. 11.

Iron Ore.—The selling of non-Bessemer grades has continued at a rapid rate. While of course some furnace interests in the central west are holding back and those in the east continue to show no interest in Lake Superior ores, nearly all the furnaces in this section are ready to cover for their requirements as soon as possible. Some of them find that it is not an easy matter to get exactly the ores they want. In addition to the trouble experienced in obtaining ores suitable for low phosphorus products, as mentioned last week, some difficulty is being experienced in getting ores high in manganese which are needed for certain mixtures. One interest which has not been a party to price agreements in past years has sold heavily at the advanced quotations during the past few days.

On base ores, with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $5; Mesabi Bessemer, $4.75; old range non-Bessemer, $4.20; Mesabi non-Bessemer, $4.

Pig Iron.—There is increased inquiry in this section and sellers are showing an increasing desire to cover their requirements for the third quarter, and even in some cases for the last half. Furnaces are inclined to be

conservative in regard to quoting after the first quarter. We note the sale of 2,000 tons of Tennessee iron to a Cleveland consumer on a basis of $14, Birmingham, for delivery throughout 1910.

An inquiry for 3,000 tons of basic for second and third quarters is pending. Other pipe interests have also been sounding the market. We quote, delivered in Cleveland, as follows:

No. 2 foundry	$17.90 to 18.00
No. 2 Southern	18.35
Gray forge	17.15 to 17.40
Bessemer	19.90
Lake Superior charcoal	19.50 to 20.00
Jackson Co. 8 per cent silvery	20.55

Coke.—Although a fair amount of business has been done in foundry coke, prices are not quite so firm. In furnace grades there is no activity in this district. For prompt delivery, we quote Connellsville furnace coke at $2.60 to $2.75, and for contract, $2.75 to $2.80. Foundry coke is quoted at $3.10 to $3.25 for prompt, and $3.25 to $3.40 for first half.

Finished Materials. — Specifications are coming in freely and buyers are showing a keen interest in the market and a desire to contract, but mills are taking on new business very conservatively. Some important tonnages have been pending, especially in bars, on which 1.50c, Pittsburg, is being firmly adhered to. Books of bar iron makers contain a larger amount of business than for a long time. There is an active demand for nuts and bolts.

Old Materials.—The market for old material in Cleveland continues dull, and such prices as are quoted must be regarded as nominal. Dealers report that there have been no inquiries and no sales of any consequence. The recent sale by the Pennsylvania railroad of heavy melting steel at a price above $18, Steubenville, is regarded as a basis for fixing the Cleveland prices. We continue to quote, gross tons, f. o. b. Cleveland, as follows:

Old iron rails	$20.00 to 20.50
Old steel rails (under 6 feet)	17.00 to 17.50
Old car wheels	17.50 to 18.00
Old steel boiler plate	14.00 to 14.50
Malleable iron (railroad)	17.00 to 17.50
Steel axles	19.50 to 20.00
Malleable iron (agricultural)	15.00 to 15.50
Heavy steel	16.25 to 16.75
Country mixed steel	14.00 to 14.50

We quote, net tons, as follows:

No. 1 R. R. wrought	$16.00 to 16.50
No. 1 busheling	14.00 to 14.25
No. 1 machine cast	15.00 to 15.50
Axle turnings	11.00 to 11.50
Machine shop turnings	10.50 to 11.00
Grate bars	12.50 to 13.00
Pipes and flues	12.00 to 12.50
Tank iron	11.50 to 12.00
Sheet iron	6.50 to 7.00
Wrought drilling	10.50 to 11.00
Stove plate	12.00 to 12.50
Cast borings	8.50 to 9.00

The plant of the Oriental Metal Bed Co., Hoboken, N. J., was destroyed by fire Jan. 10; loss $20,000.

CINCINNATI.

Buying by Pipe and Malleable Interests—Scarcity of Low-Grade Pig.

Office of THE IRON TRADE REVIEW,
First National Bank Bldg., Jan. 11.

Pig Iron.—The market continues fairly active in the way of small inquiry and small sales from 100 to 500 tons and this class of business is apparently sufficient in volume to maintain a steady tone. It is now reported that the pipe manufacturer, who bought 11,000 tons last week, has closed for about 9,000 tons additional during the present week, making the purchases of this interest aggregate about 20,000 tons. An Indiana malleable melter closed for 3,000 tons and a western malleable interest also bought 3,000 tons, during the week. A Kentucky foundry is in the market for 400 tons of northern and 400 tons of southern. A Central Ohio melter is reported to have purchased 500 tons of southern iron and another central Ohio manufacturer has closed for 1,500 tons of malleable at $17.00, Ironton. There is an inquiry, from a southern Ohio foundry for from 1,000 to 1,500 tons of malleable for last half delivery, and an Ohio piano plate maker is inquiring for 600 tons. These inquiries are mainly for first half delivery or second quarter. Prices seem to be holding at $14.00, Birmingham, for southern iron, and at $17.00, Ironton, for northern. A sale of 200 tons of Jackson County silvery on the basis of $20.00 at furnace for 8 per cent indicates that the schedule in that district is the prevailing price. There is a steady demand for low grade iron from pipe makers, who are finding it difficult to secure low grades. There seems to be an ample supply of both northern and southern iron and melters are having a choice of brands on all moderate inquiries. Southern iron is relatively lower than northern, and is in better supply for prompt shipment and first quarter delivery, as northern furnaces have their order books more comfortably filled than the southern producers. In spite of the fairly good run of inquiry and orders, the market does not seem to be showing an upward tendency. We quote for prompt delivery and delivery over the first quarter of 1910, delivered Cincinnati, based on freight rates of $3.25 from Birmingham and $1.20 from Ironton as follows:

Southern foundry No. 1	$17.75 to 18.25
Southern foundry No. 2	17.25 to 17.75
Southern foundry No. 3	16.75 to 17.25
Southern foundry No. 4	16.75 to 17.00
Southern No. 1 soft	17.75 to 18.25
Southern No. 2 soft	17.25 to 17.75
Southern gray forge	16.50 to 16.75
Northern No. 1 foundry	18.70
Northern No. 2 foundry	18.20
Northern No. 3 foundry	17.70
Jackson county 6 per cent silicon	20.20
Jackson county 8 per cent silicon	21.20
Jackson county 10 per cent silicon	22.20

Finished Material.—The market continues unchanged with steel quotable at about $1.50, Pittsburg, in carload lots. Consumers and jobbers are calling for shipments on contracts and there is a good active movement of small lots from stock. Mills show no tendency to solicit orders.

Coke.—While the cold weather has hampered transportation and the car supply in some producing districts is exceedingly short, the movement appears to be nearly equal to supplying the needs of consumers covered with contracts. It was anticipated that there would be a premium market for spot coke when severe winter conditions set in, but these anticipations have resulted in disappointment and the spot market in the Connellsville district is easier with prices for both furnace and foundry coke slightly lower. The weakness in prompt coke is also reflected in the contract prices and the general market is easy at quotations. Prices in the leading coke producing districts are as follows:

	Prompt shipment.	First half 1910.
Connellsville district:		
Foundry coke	$3.00 to 3.25	$3.00 to 2.25
Furnace coke	2.65 to 2.75	2.75 to 3.00
Wise county district:		
Foundry coke	2.75 to 3.00	3.00 to 3.50
Furnace coke	2.10 to 2.25	*Sliding [scale basis.
Pocahontas district:		
Foundry coke	2.85 to 3.00	3.00
Furnace coke	2.50 to 2.75	2.75
New River:		
Foundry coke	2.75 to 3.25	2.90 to 3.25
Furnace coke	2.35 to 2.50	2.50 to 2.60

***Sliding scale basis means $1.60 for coke based on $9, Birmingham, for pig iron, with an advance of 16⅔ per cent of the amount over $9 at which pig iron is quoted. This is the usual basis. Other forms of sliding contracts are also made.**

Old Material.—There has been some little activity in turnings and borings. These descriptions are slightly firmer. The general market, however, is quiet, with dealers waiting for a resumption of mill demand, which, it is anticipated, will begin by the first of February. In the meantime, trade is dragging with dealers not disposed to purchase, but maintaining prices fairly well on their holdings. Dealers' prices here are as follows:

Old No. 1 R. R. wrought, net tons	$13.50 to 14.00
No. 1 machinery, net tons	13.50 to 14.00
No. 1 busheling, net tons	13.00 to 13.50
Old iron rails, gross tons	18.00 to 18.50
Old steel rails (re-rolling), gross tons	17.00 to 17.50
Old short lengths, gross tons	15.50 to 16.50
Old iron axles, net tons	19.00 to 19.50
Heavy melting scrap, gross tons	14.50 to 15.00
Stove plate, net tons	10.50 to 11.00
Heavy turnings, net	9.50 to 10.00
Cast borings, net tons	8.50 to 9.00
Car wheels	15.50 to 16.00
Grate bars	12.00 to 12.50

The purchasing and traffic departments of the International Steam Pump Co. have been removed to the twentieth floor of 115 Broadway, Room 2004.

NEW YORK.

Lake Ore Being Sold in East—Rising Tendency in Pig Iron Price.

Office of THE IRON TRADE REVIEW,
Room 1005, No. 90 West St., Jan. 11.

Iron Ore.—Following the fixing of Lake Superior ore prices, representatives of several mining interests have visited the eastern district during the week, but so far as can be learned have not booked important tonnages. A few furnaces will continue Lake ores in their mixture in spite of the high price as compared with local and foreign ores, and it is probable that some ore differing slightly from standard Lake analyses will come east, as was the case during 1909, but otherwise local and foreign sources will supply furnaces throughout the east. Production in the Port Henry district during December was the largest on record, although shipments were somewhat smaller because of acute weather conditions. The heavy gales encountered by westward-bound vessels early in the month forced a large fleet of ore carriers into Bermuda and produced a coal famine at that point which tied up fully 60,000 tons of ore until relief could be had from Philadelphia.

Mill Cinder.—The week has witnessed the closing of several large contracts for roll scale and mill cinder running over the ensuing year. Prices reported in this connection were about $2.60 to $2.75 for mill cinder and $3.60 for roll scale, both at production points.

Ferro-Alloys. — Although considerable inquiry is pending, practically no business has been closed during the week and the market is without strength at the levels previously reported, $44.00 to $45.00, seaboard, for ferro-manganese and $62.50 to $63.50, Pittsburg, for ferro-silicon.

Pig Iron.—The week has developed unmistakable indications of a broadening market. Inquiries are current in New England and the New York and Pennsylvania districts on between 40,000 and 50,000 tons of various irons, and it is impossible to estimate accurately just how much tonnage has been and is being closed in a non-competitive way; but business of this character is quite common. A feature of the market is the increasing inquiry for forward delivery, some round lots now under negotiation calling for shipment into the third quarter and in one or two cases through the year. Partly because of this development and partly because furnaces are meeting with a steady increase in production costs, there is a tendency to advance Northern irons. A leading Buffalo producer announces its new schedule for first half delivery as $17.00, furnace, for 1.75 to 2.25 per cent silicon, $17.25 for 2.25 to 2.75 per cent silicon, $17.50 for 2.50 to 3.00 per cent silicon and $18.00 for 3.00 per cent and over. This interest is not anxious for second half business, but is willing to book at an advance of 50c over this schedule. On the other hand, Southern irons seem to be making little progress toward higher prices and of late warrants carrying free storage to April have been offered at $13.75, though $14.00, furnace, is the basis on which several small lots have sold for delivery in this district during the week. It is understood that about 75,000 tons of warrant iron are held in the Birmingham district. No basic sales are reported as furnaces have the situation firmly in hand and decline to sell at less than $18.75, delivered; considerable business is in prospect. Similarly negotiations for the large tonnage of low phosphorus iron recently reported have not come to a head. We note a sale of 500 tons of malleable at full prices. First quarter quotations, for delivery at New York tidewater are as follows:

Northern foundry No. 1	$19.25 to 19.75
No. 2X foundry	19.00 to 19.25
No. 2 plain	18.50 to 19.00
No. 2 southern foundry	18.25 to 18.75
Malleable	19.50 to 20.00
Gray forge	17.50 to 18.00

Finished Material.—A 200-ton inquiry for bridge material by the Pennsylvania Railroad is one of the most interesting jobs now before the trade, in that it represents the first maintenance work which this system has undertaken in a bridge way for perhaps three years, during which its purchases of bridge material have been confined to mandatory work, principally grade crossing elimination. During the week a number of small railway lettings have come to light, among them 285 tons for the Central of Vermont, taken by the Phoenix Iron Co.; 140 tons for the Atlantic and Birmingham, taken by the Lackawanna Bridge Co. and 220 tons for the New Haven, 165 tons for the Lake Shore and 115 tons for the T. & O. C., all of which went to independent interests. During the week the American Bridge Co. closed about 6,000 tons and marked off about 37,000 tons as going to competitive concerns. Its largest contracts were 1,200 tons for an extension of the General Electric plant at Lynn, and 2,200 tons for an extension of the Symington plant at Rochester. Milliken Bros., Inc., will supply 1,700 tons for a loft on Forty-fifth street and Levering & Gerigues 600 tons for a loft building on Seventy-ninth street. The Springfield municipal building, 1,500 tons, has gone to a Pittsburg general contractor and bids on the steel work for the Bankers' Trust Co., building on Wall street, are now being takn by Marc Eidlitz & Son, general contractors. Three buildings recently closed and arranged for the Bethlehem sections are a loft building on West Twenty-fifth street, 700 tons, taken by the Hinkle Iron Co.; the Boston Stock Exchange, 300 tons, taken by the New England Structural Co., and a factory building for Brown & Sharpe, 700 tons, taken by J. H. Tower of Providence. The McClintic-Marshall Construction Co. will supply 600 tons for pumping station No. 1 at San Francisco and the Van Dorn Iron Works, 900 tons, for the Detroit pumping station. A local contractor has secured the White automobile factory at Chicago, 500 tons, and F. O. Brown will supply 350 tons for a stable at Denver. The structural market shows no material improvement as regards prices and plain materials are selling on the basis heretofore reported. An extremely good demand is noted for sheets and consumers are booking as far ahead as mills will permit. We quote:

Angles, 3 to 6 inches x ¼-inch and heavier, 1.76c to 1.81c; beams, 3 to 15 inches, 1.76c to 1.81c; tees, 3 x ¼-inch and heavier, 1.76c to 1.81c; plates, carload, tank, 1.76c to 1.81c; marine boiler, 2.06c to 2.16c; bar iron, 1.65c to 1.70c; soft steel bars, 1.61c to 1.66c; sheets, No. 28, black, 2.46c.

Rails.—Inquiries for girder rails are in the market from Montreal 500 tons, Detroit 500 tons and Chicago 5,000 tons. The Northern Construction Co. is in the market for 3,000 tons of tee rails and the Albany & Southern has placed orders for the Pennsylvania Steel Co. for about 2,250 tons. The placing of a heavy order for standard sections by the Baltimore & Ohio is reported but not confirmed, though it is known that for some little time this road has had out new specifications somewhat resembling those of the Reading. British rail makers will supply about 60,000 tons for Argentine Republic and report other important foreign bookings.

Cast Iron Pipe.—A heavy demand is noted from private sources for consumption and there is every indication that spring buying will be unusually large. New York City will receive bids Wednesday on 2,000 tons

for Staten Island and the 8,200-ton Brooklyn letting is re-advertised for that date, but a decision is not expected. So far as can be learned, nothing has developed in connection with three lettings to local contractors, on which bids were opened late in November and on Dec. 8, involving 975 tons for Manhattan and the Bronx, 4,800 tons for Queens and 6,200 tons for Brooklyn.

Old Materials.—The current market is manifesting no important activity. Severe winter weather has interfered with the collection of scrap in the New England district and upper New York and embargoes are still effective at all of the larger consuming points in Eastern Pennsylvania. The heavy steel market has been further depressed by the wide-spread circulation of a report that the allied mills have closed for about 40,000 tons of foreign scrap, but this is apparently without foundation. About 1,200 tons of Panama scrap came in during the week and went to a yard in New Jersey at $14.35, f. o. b. cars, Jersey City. We quote, gross tons, prices which dealers are willing to pay at New York tidewater, as follows:

Old steel rails (re-rolling)	16.00 to 16.50
Old car wheels	15.00 to 15.50
Old iron car axles	23.00 to 24.00
Old steel car axles	20.00 to 20.50
Heavy melting steel	14.75 to 15.25
No. 1 railroad wrought	16.50 to 17.00
Iron track scrap	15.00 to 16.00
Wrought pipe	13.50 to 14.00
Cast borings	9.50 to 10.00
Wrought turnings	11.50 to 12.00
Heavy cast scrap	15.00 to 15.50
Railroad malleable	14.00 to 14.50
Stove plate	11.50 to 12.00
Grate bars	12.00 to 12.50

PHILADELPHIA.

Pipe Interests Buy Pig Iron—Prices Well Maintained.

Jan. 11.

Pig Iron.—Buying by pipe foundries has furnished the principal activity of the week, sales reported amounting to about 5,000 tons of various low-grade irons, practically all of eastern Pennsylvania make, though the inquiry involved considerable Birmingham iron. It is not known, however, that the latter was closed, as producers declined to quote on a basis below $14. Founderies appear to be operating well, but just now are not in the market for additional iron. One interest reports the sale of 800 tons of low phosphorus iron at full prices, this constituting all the business of this sort which has come to light. Similarly, basic is inactive, furnacemen declining to shade a delivered quotation of $18.75 for eastern Pennsylvania product. Virginia iron sales have been small, one interest reporting 500 tons, and another has sold a 1,000-ton block of Birmingham iron for delivery into this district. Furnace operations have practically recovered from the effects of the Christmas storm, but just that much tonnage has been lost and one of the largest makers is shipping entirely from make. The pig iron embargo at one of the neighboring steel works has been lifted. The cargo of British iron which arrived last week was taken by a local pipe interest, and another cargo under way, containing 3,500 tons of No. 3 Middlesboro and some alloys, will be taken by another pipe foundry. The Eastern Pig Iron Association meets Wednesday. We quote, delivery at eastern Pennsylvania works over the first quarter, as follows:

No. 1X foundry	$19.50 to 20.00
No. 2X Foundry	19.00 to 19.25
No. 2 plain	18.50 to 19.00
Standard gray forge	17.75 to 18.00
Basic	18.75 to 19.00
Low Phosphorus	22.75 to 23.25
No. 2 Birmingham	18.50 to 19.00
No. 2X Virginia	19.50 to 20.00
No. 2 plain Virginia	19.00 to 19.50

Finished Materials.—Contracting of steel bars, shapes and plates for first half delivery is proceeding slowly at 1.50c and 1.60c, Pittsburg, producers not being disposed to push sales for the present. There are reports that these prices are still being shaded in some quarters, but no verification is obtainable. The structural materials situation is quiet, so far as new lettings are concerned, but some important tonnages are involved in prospective lettings. It is understood that the Virginia Bridge & Iron Co. will supply 3,000 tons for the Cotton Exchange at Memphis on a tonnage basis, plans not yet being complete. Pending matters include the Richmond viaduct, 2,000 tons, reported as having been offered to a Baltimore contracting firm; the Third National Bank at Atlanta, 1,800 tons; the Mauran apartments, 1,800 tons, and the Fairmount hotel, both in this city; and a number of smaller buildings. The Bethlehem Steel Co. will supply the steel for several minor projects in the district south of here, involving about 500 tons in all. We quote, Philadelphia delivery: Structural shapes and plates, 1.75c to 1.80c; steel bars, 1.65c to 1.70c; refined bar iron, 1.70c to 1.75c; open-hearth steel billets, $30.60.

Old Materials.—The situation shows little change, though the embargo has been lifted partially at one important consuming point. Brokers are picking up a little steel on short sales at $17.50, delivered, but transactions are relatively unimportant. The explanation of present easy conditions is found in the government scrap import figures, being over 40,000 tons during the first 11 months of the year, against 4,000 tons during the similar period in 1908; tariff rulings limited this practically to heavy steel and cast scrap, principally the former. Little credence is given the report of additional steel scrap purchases abroad by the associated mills. We quote, gross tons, eastern Pennsylvania delivery, as follows:

Old steel rails (rerolling)	$18.50 to 19.00
No. 1 steel scrap	17.00 to 17.50
Old car wheels	17.00 to 17.50
Old iron car axles	29.00 to 30.00
Old steel car axles	23.00 to 24.00
No. 1 railroad wrought	18.50 to 19.00
Wrought pipe	16.75 to 17.25
Cast borings	12.75 to 13.25
Wrought turnings	14.75 to 15.25
Heavy cast scrap	17.25 to 18.00
Railroad malleable	16.75 to 17.25
Stove plate	13.00 to 14.00

BUFFALO.

General Advance in Pig Iron and Market is Stronger.

Office of THE IRON TRADE REVIEW,
932 Ellicott Square, Jan. 11.

Pig Iron.—The advance in prices which it was predicted a week ago would be made by certain interests here has already occurred and calls for 50 cents a ton more than last week's schedule. This applies to the several foundry grades, gray forge and malleable. Charcoal also has tightened and the quotation of $20 to $21 f. o. b. Buffalo has been changed to $20.50 to $21. The lowest figures obtainable for some time on No. 2X foundry were $16.75 to $17.25. Today the minimum price on this grade for first half delivery is $17.25. These quotations represent the selling price for deliveries during the entire first half. The market is strong and there are producers at this point asking and making sales at prices somewhat in advance of these. The call for iron is strengthening and the third quarter, in fact the last half, is now showing up as a factor in the market. Inquiries seem to be coming out for last half deliveries a little sooner than anticipated and it is probable that the furnace interests would about as soon that last half inquiries had held back for awhile. There is a good deal of evidence of strength in the iron market at this point and also indications that there will be no difficulty in disposing promptly of all the pig that can be produced at the local stacks this year. Latterly the talk of shaded prices, heard now and then, has disappeared and the quotations offered below definitely define the prices named at Buffalo, except that some furnaces are holding firm at prices ranging from 25 cents to 50 cents in advance

of those quoted. For deliveries during the last half 50 cents a ton more than is asked for first half is demanded. We quote for first half deliveries, f. o. b. Buffalo as follows:

No. 1X foundry	$17.75 to 18.00
No. 2X foundry	17.25 to 17.50
No. 2 plain	17.00 to 17.25
No. 3 foundry	17.00 to 17.25
Gray forge	16.75 to 17.00
Malleable	17.25 to 18.25
Basic	18.25 to 18.75
Charcoal	20.50 to 21.00

Finished Products.—There are few new specifications of note here, although it is understood several are likely to emerge from the architects' offices within a week or two. The coming out of a number of important plans before the close of the year and the subsequent absence of notable new business have left this market very quiet. Inquiries for small tonnage extending over the first half are fairly numerous and show some gain since the beginning of the year. There are, however, few discouraging features in the local market. Deliveries are about as far behind as previously reported. The export or Canadian business, which is handled by the Buffalo offices of the mills, is of some interest now for the reason that foreign competition has shown itself rather emphatically with quite an advantage on deliveries in some cases. An inquiry received here from across the border for 1,000 tons of material brought out many interesting figures and it is reported here that the foreign mills, English in this case, quoted a price equivalent to $1.30 Pittsburg on shapes including delivery in Canada in from four to six weeks. The business has not been closed.

Old Material.—We quote:

Heavy melting steel	$16.25 to 16.75
No. 1 railroad wrought scrap	18.25 to 18.75
No. 1 railroad and machine cast scrap	16.50 to 17.00
Old steel axles	21.00 to 21.50
Iron axles	26.00 to 26.50
Car wheels	18.00 to 18.50
Railroad malleable scrap	17.00 to 17.50
Machine shop turnings	11.75 to 12.25
Cast iron borings	9.25 to 9.75
Low phosphorus steel scrap	21.00 to 22.00
Old iron rails	20.00 to 21.00
Tank iron	14.00 to 14.50
Sheet iron	9.00 to 9.50
Stove plate	13.75 to 14.25
Pipe and flues	14.00 to 14.50
Grate bars	13.00 to 13.50
Boiler plate	14.50 to 15.00

ST. LOUIS.

Inquiries for Moderate Tonnages—Coke is Very Dull.

Jan. 10.

Pig Iron.—The inquiry for 500 to 600 tons of ferro-silicon reported in THE IRON TRADE REVIEW under date of Jan. 6 has been closed. The inquiry for 1,000 tons of malleable for third quarter delivery, reported on the same date, is still out, but may be closed at any time.

Inquiries are out today but not in the immediate St. Louis territory for 1,000 tons of Southern soft and 1,000 tons of Southern No. 2 iron for delivery over the first half of the present year.

Southern No. 2 is offered at $14, Birmingham basis, and local agents say they are having some difficulty in getting the furnaces to make that rate, and that it may be withdrawn at any time for a higher figure. The best price that can be made for Southern No. 2 for second quarter delivery, probably is $14.25.

Northern iron is offered at $17 for immediate delivery, and at $17.50 for shipment over the second quarter, f. o. b. Ironton in each instance.

Local agents are very confident that business will open up in earnest as soon as stocktaking is at an end, and the feeling toward prices is that there will be some advance.

Our quotations on Southern iron, delivered, to which the Birmingham freight of $3.75 has been added, follow:

No. 1 foundry	$ 18.25
No. 2 foundry	17.75
No. 3 foundry	17.25
No. 4 foundry	16.75

Coke.—The demand for coke is almost at a standstill. But prices are firm, and local agents believe this commodity will begin to move in a short time. Quotations on Connellsville 72-hour foundry stand at $3.10 minimum for immediate shipment, and $3.25 for first half delivery. Connellsville 48-hour furnace coke is offered at $2.50 to $3 for prompt delivery according to quality. A lower price of $2.75 for future shipment is still heard of. The price on Virginia 72-hour foundry coke is $3 to $3.25 for prompt, and $3.25 to $3.50 for future shipment. These prices are all f. o. b. ovens. The freight rate to East St. Louis and St. Louis is $2.80, and $2.70 from the Virginia fields when shipment is destined beyond St. Louis. Bi-product coke is firm at $5.80 St. Louis.

Old Material.—Scrap iron prices remain as follows, with very little demand:

Old car wheels	$17.00 to 17.50
Old iron rails	19.00 to 20.00
Rerolling rails (4 ft. and over)	16.75 to 17.25
Old steel rails (2 ft. and under)	16.50 to 17.00
Light section relayers, 45 lbs. and under, subject to inspection	21.00 to 23.00
Relaying rails, subject to inspection	24.50 to 25.00
Frogs, switches and guards	15.50 to 16.00
Heavy melting steel	15.50 to 16.00
Shoveling steel	14.00 to 14.50

We quote, net tons, as follows:

No. 1 R. R. wrought	$14.50 to 15.00
No. 2 R. R. wrought	13.50 to 14.00
Arch bars and transoms	17.50 to 18.00
Knuckles, couplers and springs	15.00 to 15.50
Shafting	17.00 to 17.50
Iron car axles	20.00 to 21.00
Steel car axles	20.00 to 21.00
Locomotive tires	18.00 to 18.50
No. 1 country wrought	12.25 to 12.75
Pipes and flues	11.75 to 12.00
No. 1 cast, 150 lbs. and less	14.00 to 14.50
No. 1 busheling	13.00 to 13.50
No. 2 busheling	9.75 to 10.25
No. 1 boiler cut	11.50 to 12.00
Boiler purchings	13.00 to 14.00
Cast and mixed borings	7.50 to 8.00
Machine shop turnings	10.75 to 11.25
Railroad malleable	13.25 to 13.75
Agricultural malleable	11.50 to 12.00
Stove plate and light cast scrap	11.50 to 12.50
Angle bars, splices, etc. (iron)	17.25 to 17.75
Angle bars, steel	15.50 to 16.00

BIRMINGHAM, ALA.

Fair Sales Made and Market is Improved in Tone.

Jan. 10.

Some 7,000 to 8,000 tons of pig were sold during the past week; in one instance, a good round lot for shipment the first half of the year. Other sales of 300 to 800 tons were made. There were still other smaller lots, ranging from carloads to 50 to 75 tons for prompt shipment; $14 per ton at the furnace was minimum price on any of the above sales; that price applicable for prompt shipment and first quarter, while $14.50 for later delivery was received. There was also recorded a sale of good lot of special iron at $15 per ton at the furnace—some 600 or 800 for first quarter. There is a much better feeling in the market than has existed for the past several weeks, and the recuperation from the holidays has been more marked and satisfactory than most well-posted men expected. Inquiries have been better all around. Twenty-five cents per ton premium is being paid for what available low-grade iron there is, and a good lot of gray forge was sold at $12.75 per ton at the furnace. A canvass of the situation has shown that two of the largest producing interests in the district are out of the market, and another one practically out. This, together with an inevitable curtailed output for the month of January, will have a telling effect on future transactions. Several stacks are at present out of commission, and another one is due to go out about the 15th or 20th of this month. The southern charcoal iron market is quoted firm at $22.50 per ton for prompt, or first quarter, and $23 per ton for first half.

Trading in the cast iron market continues on practically a hand-to-mouth basis, with an occasional large tonnage being placed. In fact better results could hardly be expected at this season of the year, as practically all outside work is at a standstill. It is learned, on good authority, that several large interests are now actively engaged in figuring on their future needs, and lettings for such business

will soon come up. Prices rae firm on following basis, per net ton f. o. b. cars here: Four-inch, $25 per ton at the furnace; average of $22 per ton for sizes to 12 inches, with $1 a ton for gas pipe.

Trading in old material has been at a low ebb, comparatively, the past week. Sales of small lots are being made now and then, with following prices prevailing: Per gross ton, f. o. b. cars here:

Old iron axles	$20.00 to 20.50
Old iron rails	15.75 to 16.25
Old steel axles	17.75 to 18.25
No. 1 R. R. wrought	14.00 to 14.50
No. 2 R. R. wrought	12.00 to 12.50
Old steel rails	12.50 to 13.00
Dealers' mixed wrought	11.00 to 11.50
No. 1 machinery	12.50 to 13.00
No. 1 steel	13.00 to 13.50
Old standard car wheels	13.75 to 14.25
Light castings, stove plate	9.75 to 10.25
Cast borings	6.00 to 6.25

The coal market has been quite active in all lines, and to get anything like a satisfactory coal the consumer has to pay at least $1.50 per ton for steam and $2.75 to $3 per ton for domestic coal. This, in turn, reflects a healthy condition as to the coke market.

BRITISH IRON MARKET.

Improvement is Shown in Pig Iron and Finished Material.

Prince's Chambers, Corporation St., Birmingham, Eng., Dec. 29.

The marked improvement in the pig iron market continues. The improvement is the more remarkable in view of the heavy stocks, nearly 25,000 tons having been added since the beginning of the year, and 5,000 tons during the few days covering the Christmas holidays. The present total now stands at 387,623 tons. The warrant holders are evidently sanguine as to the future, as they ask considerable increases on forward accounts. The market has had to resist, also, rather less satisfactory reports from America. The shipments have been interrupted by the holidays, but now look like turning out pretty well for the month. Similarly cheerful reports come from Manchester, a market which largely serves the Sheffield district, Derbyshire foundry pig iron, in particular is very strong. The sellers of forge iron compare rather poorly owing to the weak condition of the maket, the demand for iron generally being poorer than for steel. The hematite market continues remarkably strong. For mixed numbers for prompt delivery the price is 63s 6d ($15.54), while for February and March 65s ($15.90) will have to be paid. The increase in stocks is partly due to the general stoppages of foundries during the Christmas holidays.

In the finished department, the most noteworthy improvement is in steel, and it is believed that a further rise in bars and billets will take place shortly. The rail mills are busier and steadily improving, ship building demands are increasing the output of plates. It is likely that the markets tomorrow in Birmingham will show a further improvement. Among the achievements of the last half of the year is a big output from Workington, which is the headquarters of the Cumberland rail combine. The Mossbay steel works hitherto have not surpassed 3,000 tons as their weekly output, but during the latter half of the year they established a record of 5,000 tons per week. The firm has sufficient orders to keep the works well employed for some time.

METAL MARKETS.

ST. LOUIS.

Jan. 10.

Lead and Zinc.—The highest price reported to have been paid in the Missouri-Kansas-Oklahoma district for zinc blende last week was $52 a ton, and the highest base price for 60 per cent grades for delivery this week was $49.50. This was an increase of 50 cents over the previous week.

The base price declined to $48 a ton, and the average per ton of all blendes sold was $47.50, as compared with $46.50 for the previous week.

Calamine sold at a top price of $30 a ton, with $27 as the highest base for 40 per cent grades, shading down to $26. The average price for calamine was $28, as compared with $29 for the week prior.

Lead ore sold for $58 a ton on a basis of 80 per cent. The average high price paid for lead was $57.50 as compared with $58 for the previous week.

St. Louis spelter was offered at $6.50 Saturday. Pig lead was steady at $4.70.

The total valuation for the week was $221,392 as against $284,113 the previous week. The roads were obstructed by ice and sleet, and teamsters experienced difficulty in keeping their haulings up to the standard.

CHICAGO.

Jan. 11.

New Metals.—Delayed shipments of copper from some of the western mines, on account of the heavy fall of snow, has brought about a peculiar condition in that metal. Pressing wants are being filled in the middle west by re-shipping some of the accumulated stocks at tide-water, which have been awaiting shipment across the Atlantic. Future copper is active, while prompt delivery orders are rather slack. A few prices show slight fractional changes only.

We quote as follows: Lake copper, carload lots, 14¼c to 14½c; casting, 13¾c, smaller lots, ¼c to ¾c higher. Spelter, 6.25c; lead, desilverized, 4.70c to 4.75c, in 50-ton lots; corroding, 25c per 100 pounds higher; sheet zinc, $8 list f. o. b. La Salle in car lots of 600-pound casks; pig tin, 33¾c to 34¼c; Cookson's antimony, 10½c; other grades, 9¾c to 10¼c.

Old Metals.—There has been a better feeling in this market recently, and the demand has shown a decided advance, with prices benefitting from the same.

We quote, dealers' selling prices, as follows: Copper wire, 13½c; heavy copper, 13½c; light copper, 11½c; heavy red brass, 13c; heavy yellow brass, 10c; light brass, 7½c; No. 1 red brass borings, 10½c; No. 1 yellow brass borings, 8½c; brass clippings, 9½c; tea lead, 3.85c; lead scrap, 4½c; zinc, 4¾c; tin pipe, 32c; tin foil, 29c; pewter, 24c; electrotype plates, free from wood, 4½c; electrotype dross, 3¼c; stereotype plates, 5c; stereotype dross, 3½c; prime slab zinc dross, $78 per ton.

NEW YORK.

New York, Jan. 11.

Copper.—The figures compiled by the Copper Producers' Association, of the production, deliveries both domestic and foreign, and stocks, were favorably interpreted by the trade. This report, which is given in another part of this paper, shows the supply of copper decreased during the month of December 11,237,000 lbs. Of course, the heavy buying movement in November, by consumers both abroad and in America, was responsible for the heavy deliveries. The production, however, was curtailed by approximately 4,000,000 lbs., but this was largely caused by the switchmen's strike in the Butte district. There is no doubt that the falling off in Butte was more than 4,000,000 lbs., so that the ratio of production was on the increase. The trade is rather mystified that London, this morning, did not give more of a response in the way of higher prices.

As far as actual business is concerned, it is practically at a standstill, although one sale made on Mon-

day was on a basis of 14c delivered, or 13⅞c net cash f. o. b. In the Lake market, things are very quiet, the largest interest having withdrawn its quotation and another manufacturer of high grade Lake expected to advance its figures to at least 14¼c. The wire trade is still dull, but the brass mills are unusually busy. The scarcity of brass mill special spelter furnishes evidence enough of this. Several new electrification schemes for steam railroads have cropped out recently, but the wire trade is unusually quiet.

Tin.—After having made several spectacular movements the latter part of last month, the tin market has quieted down. The last good day's business was Jan. 4, when between 300 and 400 tons were disposed of. The market during the week has wavered between 33.30c and 32.65c, the highest figure being named Jan. 5. Today tin can be bought at 32.75. The supply is ample for all present needs and it looks as though there had been a falling out among the bull leaders in London. Aside from the dominant interest in the last move, Reichard & Friewald, there were at least two other syndicates operating. It is expected that the tin business will improve toward the latter part of the month.

Lead.—The market is quiet and the American Smelting & Refining Co. continues to quote shipment lead in 50-ton lots at 4.70c. They are making shipments promptly, but there is no doubt that a great deal of lead was disposed of on the way up from 4.40c to 4.70c. The orders booked at 4.70c are practically negligible, and the independent producers claim the same, their figures being 4.75c. In St. Louis the market is quiet at 4.65c.

Spelter.—Prices declined 5c per 100 lbs. during the week. Prime western brands can be had in New York at 6.25c. The ease with which they are obtainable at this figure leads to the belief that it might be shaded to the extent of 5 or 10 cents for a desirable order. In St. Louis prices are nominal, at the wide range of 6.05c to 6.15c.

Antimony.—This market is a puzzling one. It is impossible to bring Cookson's here for less than 8½c and it is equally impossible to sell the metal for more than 8¼c. The same condition prevails in Hallet's antimony, where import cost is 9c and the prevailing price 8½c. Some disposition was recently shown on the part of dealers to turn down orders at the minimum price.

LOW PHOS PURCHASE.

Pittsburg, Jan. 12. (By wire.)

A Pittsburg steel company has purchased 1,200 tons of standard low phosphorus iron, part for the first quarter and part for the first half at a reported low price. The standard low phosphorus market, Pittsburg, on large lots appears not much stronger than $23, delivered, but in small tonnages for prompt shipment, up to $23.80, Pittsburg, has been obtained by sellers. Copper low phosphorus iron is about $22.25, Pittsburg.

WILL BUILD NEW PLANT AT ERIE, PA.

Pittsburg, Jan. 12. (By wire).

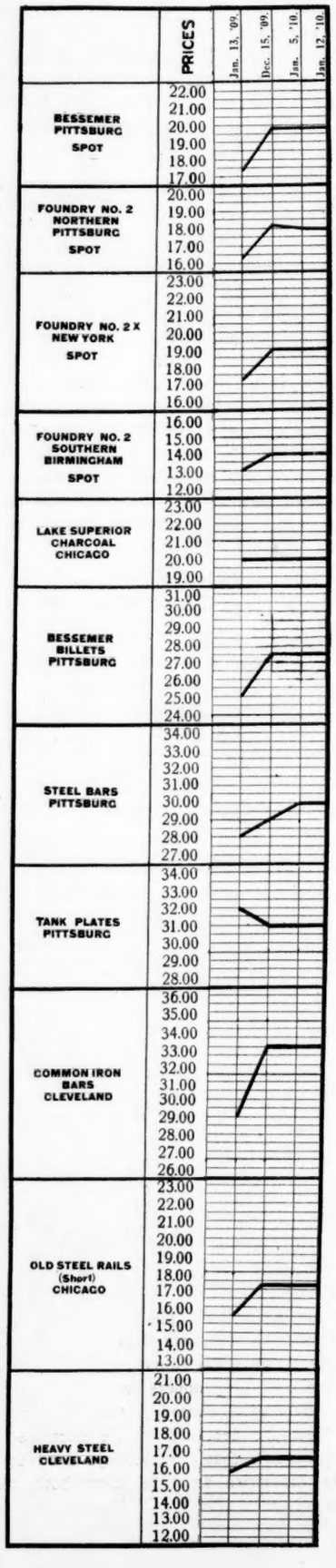
The Erie Engine Works, Erie, Pa., has purchased a tract of ten acres of ground in that city and will proceed at once with the erection of a large new plant which will double its present capacity. The new works will consist of an iron foundry 135 x 440 feet, an office building 40 x 140 feet, a power plant 40 x 80 feet, a storehouse 40 x 80 feet (2 stories), carpenter shop 40 x 50 feet, and a reinforced concrete fire proof pattern storage building 55 x 104 feet (4 stories). The buildings will be of the latest fireproof saw-tooth design of steel construction, and will require about 700 tons of shapes, for which bids have been taken. A yard crane runway, 40 x 200 feet, will also be provided. Later a machine shop and other buildings will be added. The melting equipment of the new foundry will consist of two 66-inch cupolas. Two 30-ton cranes will serve this department, and a 10-ton yard crane will also be installed. F. Felkel, of Pittsburg, is the engineer in charge.

J. W. PAXSON CO. TO OPEN NEW ENGLAND WAREHOUSE.

Wm. T. Nicholson, Providence, R. I., formerly associated with Cutter, Wood & Stevens, Boston, will represent the J. W. Paxson Co., Philadelphia, manufacturer of foundry supplies and equipment in the New England states, with offices and a warehouse in Providence, for the sale of the complete Paxson line of foundry supplies, equipment and molding sands.

The receivers for the Birmingham Coal & Iron Co., which operates two blast furnaces at Boyles, Ala., have been discharged by the federal court at Birmingham, Ala. The creditors were paid in full. The company became involved in financial difficulties early in 1909, receivers being appointed Feb. 5.

PRICE CHART.



ORE FREIGHT RATES

Advanced Five Cents Over Last Year —Handling Charges Reduced.

An understanding has been reached between shippers, dock operators and vessel owners regarding freight rates and handling charges for 1910. The vessels will get the same rate as prevailed in 1907, though not in quite the same way. The rate from the head of the lakes will be 70 cents as against 75 cents paid in 1907, but unloading charges will be 15 cents as against 20 cents, which has been paid for several years past. This is equivalent to a 75-cent rate to the boat. The freight rate has therefore been marked up five cents all around over last year's schedule, being now 70 cents from the head of the lakes, 65 cents from Marquette and 55 cents from Escanaba.

The reduction in the unloading charge is quite significant. Vessel owners have long contended that they were paying too much for unloading ore and that the dock companies were making an unreasonable profit. No headway was made, however, even though the Lake Carriers' Association appointed a committee to investigate the subject. Since the self-filling bucket was developed, unloading machinery has rapidly increased in efficiency and the ore handling facilities at nearly all the Lake Erie docks have been modernized within the past three or four years. Vessel owners have all along felt that they should have a share in this reduction of costs, though actual data as to costs have always been difficult to obtain. There are records, however, of power consumption varying from 0.35 kilowatt hours per ton of ore handled to 0.5, and the total cost per ton for unloading, including depreciation and maintenance, is figured at from five to six cents. The present rate of 15 cents per ton should, therefore, leave an excellent profit to the dock companies.

Vessel owners are feeling quite content over the situation and expect to make some money during 1910. The past two years have been a drain upon their resources. During 1908 they were content to pay interest on bonds, and while 1909 was a better year, still some of the companies operating the largest class of carriers did not deem it prudent to declare a dividend. Obviously stockholders are hoping that a melon will be cut during 1910. The year will undoubtedly be a very busy one. Ore shippers desire to move 50,000,000 tons of ore. Coal shippers will also have to move an increased quantity of coal to meet the demands of the northwest. It is known that the railways are very busy otherwise and are short both on motive power and cars. Vessels, therefore, will not get the dispatch during 1910 that they got during 1909, and while 50,000,000 tons of ore can undoubtedly be moved, these physical conditions will make for a most strenuous season.

The Great Lakes Protective Association will meet in Detroit on Jan. 18 and 19 to consider the subject of insurance for 1910. They have been carrying five per cent of lake insurance during 1909 and it is believed have made a little money thereby. However, the whole lake insurance situation is not satisfactory to underwriters and probably some plan will be evolved at the forthcoming meeting to put the whole business upon a sounder basis.

The annual meeting of the Lake Carriers' Association will be held at the Hotel Cadillac, Detroit, on Jan 20.

The steamer W. C. Richardson, sunk off Buffalo harbor, is in bad shape. The ice has heavily windrowed about her and it does not now look as though much would be left of her in the spring.

Work has been also abandoned until spring upon the steamer Henry Steinbrenner, sunk in Mud Lake.

The wrecker Favorite, which endeavored to go to the relief of the package freighter Wissahickon, stranded on Outer Duck Island, was forced to return to Cleveland, being unable to break a passage through the heavily windrowed ice near the mouth of the Detroit river.

HICKMAN, WILLIAMS & CO. MEETING AT LOUISVILLE.

The organization of Hickman, Williams & Co. gathered at Louisville on Monday, Jan. 3. Business matters were discussed during the day with luncheon at the Pendennis Club at noon, and a banquet was served in the evening with a number of invited guests. Baylor Hickman, resident partner of the firm at Louisville, acted as toast-master and host. The entertainment was elaborate and the occasion one which furnished both profit and pleasure to the participants.

COKE WAGES RESTORED.

Notices at the different plants of the company were posted Jan. 10 by the H. C. Frick Coke Co. advising its employes of the restoration of wages to the level prevailing prior to the reduction of 8 to 9 per cent made Jan. 1, 1908 of the schedule. which had been in force since March 1, 1907. The new scale will become effective Jan. 16, and will apply to all classes of labor at the company's numerous plants.

About 20,000 operatives employed by the H. C. Frick Coke Co. are affected by the restoration.

PRENTISS HAS RETIRED

As President of the Cleveland Twist Drill Co.

Francis F. Prentiss, president of the Cleveland Twist Drill Co., Cleveland, resigned that office Jan. 4 because of ill health. He has left on a tour around the globe which will occupy probably a year. He will not re-enter active business again upon his return. Vice President J. D. Cox has been chosen to succeed Mr. Prentiss as president.

Mr. Prentiss is one of the most active and enterprising Cleveland business men. Born in Montpelier, Vt., after some years in the banking business he came to Cleveland in 1879, and became associated in the firm of Davies & Prentiss, lock manufacturers. The next year he formed a partnership with J. D. Cox, Jr., as Cox & Prentiss, twist drill manufacturers. From a small concern employing 12 workmen, the firm developed into the present large manufacturing company whose well-equipped plant occupies five acres in the center of Cleveland's manufacturing district. The partnership was dissolved in 1904, being succeeded by the incorporation of the Cleveland Twist Drill Co., with Mr. Prentiss as president and general manager. Every known labor-saving and safety device has been installed in the plant and its employes restaurant is a model. Mr. Prentiss has three times circled the globe, establishing agencies in Europe, Asia, South America and Australia. He has always interested himself in plans for the betterment of workingmen, is president of Hiram House social settlement, is president of St. Luke's hospital, and for one term was president of the Chamber of Commerce. He is a director in the Superior Steamship Co., and a member of a number of clubs.

Rogers-Brown Meeting.—The annual meting of the members of the firm of Rogers, Brown & Co. was held in Cincinnati on Friday and Saturday, Jan. 7 and 8. They were entertained by Mr. Meachem at his home. J. K. Pollock entertained the members of the firm at his home at a dinner on Friday evening, Jan. 7.

The puddling department of the Sligo Iron & Steel Co., at Connellsville, Pa., has resumed operations. The other parts of the plant will be started as soon as possible.

STOCKS DECREASED.

December Report of Copper Producers' Association.

A decrease of 12,237,416 pounds in the stocks of copper in the United States is shown by the December report just made public by the Copper Producers' Association. The figures follow:

	Dec.	Nov.
Stocks	153,003,527	153,509,626
Production	117,828,655	121,618,369
Total	270,832,182	275,127,995
Domestic delivery	69,519,501	66,857 873
Exports	59,546,570	55,266,595
Consumption	129,066,071	122,124,468
Stocks remaining	141,766,111	153,003,527

The production, deliveries and stocks for each month of 1909 are given in the following table:

	Production.	Deliveries.	Stocks.
Dec.	117,828,655	129,066,071	141.766 111
Nov.	121,618,369	122,124,468	153.003.527
Oct.	124,657,709	122 620,855	153,509 625
Sept.	118,023,139	102,182,932	151,472,772
Aug.	120,597,234	107,996,911	135.196,930
July	118,277,603	150 539,057	122,596,607
June	116,567,493	131,557,573	154,858.061
May	118,356.146	131,706,078	169,848.141
Apr.	113,574,292	112 656,121	183.198 073
Mar.	117,058,661	106,063,007	182,279,902
Feb.	103,700,817	74,546,614	173,284,248
Jan.	112,135,200	90 362,421	144,130,045

Exports and domestic deliveries monthly throughout the year were:

	Exports.	Domestic.	Total.
Dec.	59,546,570	69,519,501	129,066,071
Nov.	55,266,595	66,857,873	122,124,468
Oct.	56,201,238	66,359,617	122,622,855
Sept.	50,077,777	52 105,155	102,182.932
Aug.	48,382,704	59,614 207	107.996 911
July	75,018,974	75,520,083	150,539 057
June	70,966,457	60 591,116	131,557,573
May	70,542 753	61,163,325	131,706 078
Apr.	65,110,111	47,546,010	112,656 121
Mar.	59,191,043	43 871,964	106,063.007
Feb.	30,968,496	43,578.118	74,546 614
Jan.	38,449,797	51,862,624	90,362,421

The total production of copper for 1909 approximated 1,405,403,056 pounds, and deliveries were 1,385,994.211 pounds, of which 705,051,351 pounds were domestic and 680,922,620 pounds were for export.

MAY SOON BE SOLD.

The plant of the General Castings Co. at Verona, Pa., it is reported, will shortly be offered at public sale by the receiver, the Commonwealth Trust Co., of Pittsburg. The plant, which is a large, modern one, went into the hands of a receiver two yars ago and has been idle since that time. Some parties who have been desirous of obtaining control of the property with a view of operating it, have been quietly buying up the claims against it.

OBJECTED TO STOCK BONUS.

Senator Melvin Jones, of Toronto, has resigned as a director of the Nova Scotia Steel & Coal Co., assigning as a reason that he disagreed with his colleagues as to their financial policy. He especially objected to their action in declaring a stock bonus to the shareholders. The stock of the company has lately shown an upward tendency, and its activity is thought to be largely due to its being bought by Dominion Steel interests as a preliminary to a contemplated merger.

SETTLEMENT OF GREAT NORTHERN ORE ROYALTIES.

The annual settlement between the United States Steel Corporation and trustees representing the Great Northern ore interests was scheduled to take place Monday. The minimum amount of ore upon which the Steel Corporation was to have paid royalties during 1909, under the Great Northern ore agreement, was 2,250,000 tons, and the royalty for the year was 91.8 cents per ton. Under the agreement, the Steel Corporation settles at intervals of three months for ore actually mined, and settles at the end of the year for at least sufficient to bring the royalties up to the agreed minimum. Since very little ore was taken out of the Great Northern properties during the year, nearly the whole of the minimum sum, amounting to $2,065,500, had to be paid. This sum is equivalent to a dividend of 1.37 per cent on the $150,000,000 of Great Northern ore certificates.

TO COMPLETE McKEESPORT REBUILDING IN JULY.

It is stated in official sources that the extensive improvements at the McKeesport plant of the National Tube Co., which have been in progress for several years and which entail practically rebuilding the works, are expected to be finally completed about July 1. The program of improvements included the installation of new billet and blooming mills, of large additional pipe furnace capacity and of extensive rebuilding and enlargements of buildings. The work has been delayed through the fact that it is being carried on while the plant remains in operation.

Negotiations are reported as under way by which the leading stove manufacturing plants at Reading and elsewhere in the Schuylkill valley will be merged, with a combined capital of $4,000,000 or $5,000,000.

The Reading Iron Co., Reading, Pa., a few days ago made a shipment of 45 carloads of pipe, the largest single day's shipment from the company's tube works in years.

LARGEST IN THE WORLD

Will be Finished Tin Plant of Jones & Laughlin Steel Co.

Announcement is made that the complete tin plate plant planned by the Jones & Laughlin Steel Co., at Aliquippa, Pa., will be the largest single works of its kind in the world. The plant, when of its ultimate size, will consist of 36 mills. The first 12-mill unit, which is now undergoing construction, is expected to be ready for operation in March.

Philip Schaefer, formerly general manager of sales of Follansbee Bros. Co., Pittsburg, manufacturer of tin plate and sheets, has associated himself with the Jones & Laughlin Steel Co., as assistant general manager of sales, and will have charge of the sales of the tin plate department. He will assume his new duties Jan. 10. The Jones & Laughlin Steel Co. will give special attention to the manufacture of coke plates for canners' requirements.

At the present time the largest tin plate plant of the United States is the Shenango works of the American Sheet & Tin Plate Co., at New Castle, Pa., which contains an equipment of 30 hot mills.

SEVERAL PRESSED STEEL CAR CO. CHANGES.

Several important changes have been made among the executive officials of the Pressed Steel Car Co., Pittsburg, growing out of the election of a successor to the late Jas. W. Friend. The office of first vice president in charge of operations, which was held by Mr. Friend, has been abolished, and O. C. Gayley, second vice president and general manager of sales, with headquarters in New York, has been named as vice president. Mr. Gayley will remain in New York in charge of the sales department. Jos. B. Rider, general manager of the company, has been placed at the head of the operating department. The Pressed Steel Car Co. has decided to abandon, with the exception of those of the district sales department, the suites of offices now located in the Farmers Bank building, Pittsburg, and will concentrate its headquarters at the McKees Rocks, Pa., plant, where they will be installed in the present commodious and well-arranged office building.

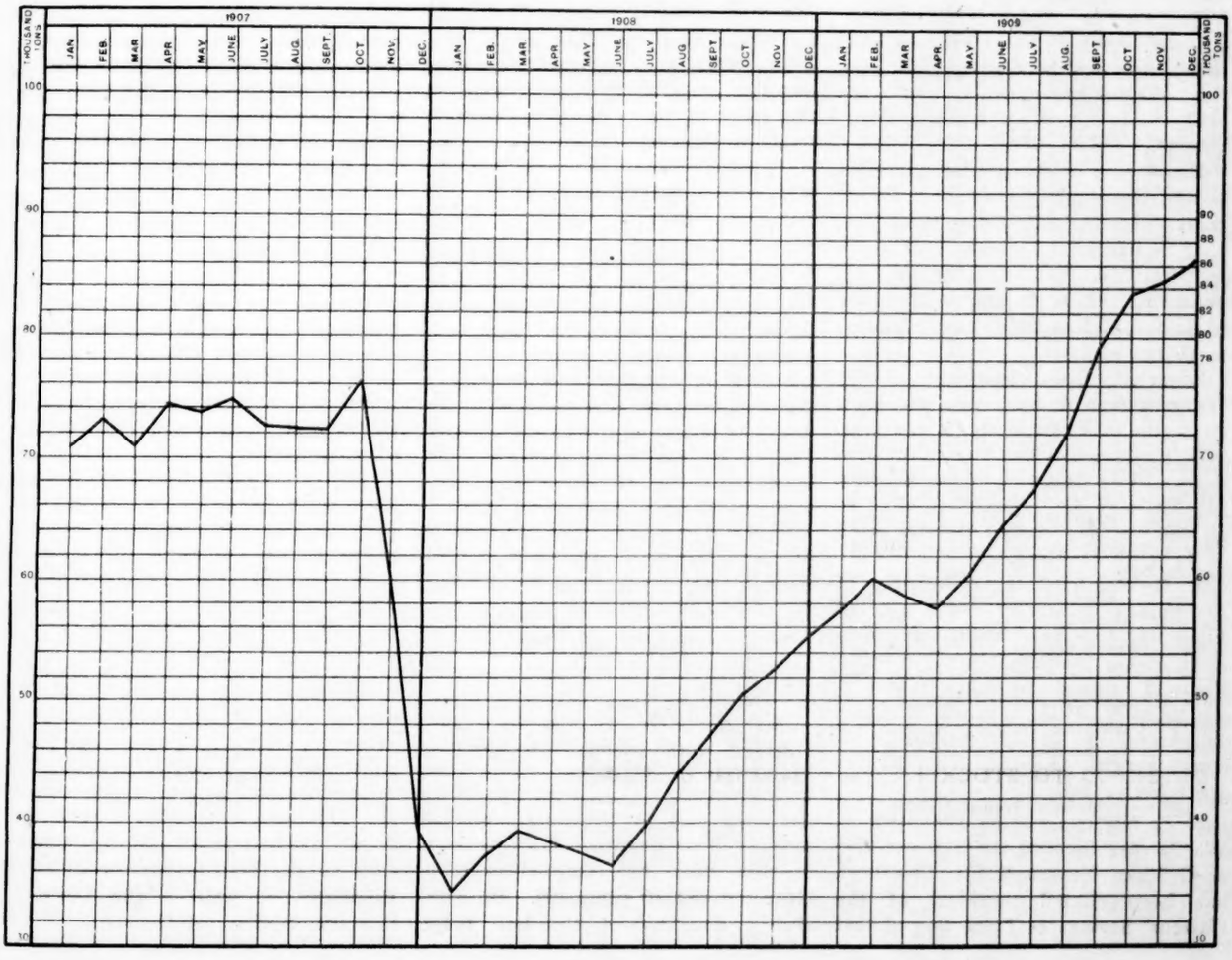
The Sloss-Sheffield Steel & Iron Co. blew out its No. 1 city furnace, Dec. 10, and its No. 4 North Birmingham stack on Dec. 17.

AVERAGE DAILY PRODUCTION OF PIG IRON FOR THREE YEARS

The accompanying chart graphically represents the fluctuations in the average daily production of anthracite and coke pig iron throughout the United States for the past three years. It shows the results in production of the prompt enforcement of the drastic policy of curtailment which went into effect in Oct., 1907, immediately following the panic, and the unexampled rapid recovery following the business revival in 1908.

From the record daily average of production reached in Oct., 1907, which was 76,119 tons, the fall was rapid until the bottom was reached in January, 1908, when the average daily output of pig iron was 34,316 tons. In the next two months recovery was noted, but with the business uncertainty of the spring months of that year the production fell once more until July, when the daily average had recovered to about that of the preceding March, 39,632 tons in the former and 39,672 tons in the latter. From July, 1908, onward, however, the recovery was steady until it reached 60,088 tons in February, 1909. For two months, following the declaration of the "open market" by the various steel-making companies the middle of February, there was a recession, in March to 58,795 tons, and in April, which was also a shorter work-month, to 57,687 tons. Thereafter the daily average rose by leaps and bounds to the highest figure ever recorded in the history of American pig iron manufacture. In September, October, November and December of the year just closed, the total monthly production surpassed the record production of October, 1907. The daily average in September was 79,186 tons; in October, 84,001 tons; in November, 84,425 tons; and in December, 86,539 tons.

From the low point in January, 1908, 34,316 tons, to the high point in December, 1909, 52,223 tons, the daily average showed an increase of 152 per cent. December just passed showed a gain in daily average production over the heretofore record of October, 1907, of 13.6 per cent.



MINE EQUIPMENT ORDERED.

The Monongahela River Consolidated Coal & Coke Co. has placed an order for 400 steel mine cars with the Ohio Ceramic Engineering Co., Cleveland, the equipment being for the Monongahela company's large mine at California, Pa. The Ohio Ceramic Engineering Co. has just completed the shipment of 250 steel mine cars to the Pittsburg-Buffalo Co., for its Marianna mine.

The Hanson & Van Winkle Co., Newark, N. J., manufacturer of electrical supplies, sustained a loss of $50,000 by fire Jan. 10.

No. 3 stack of the Wharton, N. J., furnaces was blown out Dec. 29 for relining and reconstruction.

PERSONAL.

J. A. Farrell, president of the United States Steel Products Export Co., has returned from a trip abroad.

Borden E. Bacon has been appointed assistant general manager for the Lindeman Machine Co., of Muskegon, Mich., effective March 1.

Vice President Charles H. Fox, of the Ahrens Fire Engine Co., Cincinnati, has sold his interests in that corporation.

Edward Grey, general manager of the Riverside Engine Co., Oil City, Pa., on Jan. 1 severed his connection with that company to become associated with the Ford Motor Co., Detroit.

Wylie L. Byers, who for several years past has been associated with the coke business in Connellsville, Pa., region, has been appointed the manager of the offices of J. K. Dimmick & Co., at Uniontown, Pa.

E. L. Billingslea and Jos. J. Olson, of Rogers, Brown & Co., Chicago, sailed on Jan. 5 on the White Star steamer, "Cedric," for a tour of the countries bordering on the Mediterranean. They will be absent for several weeks, returning about April 1.

Walter McFarland, acting vice president of the Westinghouse Electric & Mfg. Co., has tendered his resignation, to engage in other lines of business. He has been connected with the Westinghouse company since 1900 and is an expert mechanical engineer.

David Van Alstyne, vice president of the American Locomotive Co. in charge of manufacturing, resigned Jan. 1. The announcement has been made by President Marshall that this department will be in charge hereafter of James McNaughton, vice president in charge of sales.

Edgar S. Cook, president of the Warwick Iron & Steel Co., will leave on a trip to Egypt early in the year.

H. L. Campbell has been elected to the board of directors of the Glamorgan Foundry Co., Lynchburg, Va., to fill the vacancy caused by the death of Judge J. D. Horseley.

A. B. Shephard, superintendent of the bureau of water of the city of Pittsburg, has been made vice-president of the Monongahela Connecting Railroad, owned by the Jones & Laughlin Steel Co. Frank McCune, superintendent of the railroad, becomes general manager. The changes are effective Feb. 1.

D. Z. Norton, who in 1890 with E. W. Oglebay founded the iron ore firm of Oglebay, Norton & Co., Cleveland, has been elected president of the Citizens' Savings & Trust Co., of that city, of which he had been first vice-president. He succeeds H. R. Newcomb, who resigned the presidency on account of ill health.

Louis R. Steuer, who has been assistant at the Gautier, Pa., plant of the Cambria Steel Co., to J. Leon Replogle as superintendent of the order department, has been appointed to succeed Mr. Replogle, who in turn has been appointed assistant to the general manager of the company. On Jan. 1, 24 years ago, Mr. Steuer entered the employ of the Cambria Iron Co. as office boy.

Howard C. Matlack, formerly connected with Frank Samuel, Philadelphia, has associated himself with G. Walter Bates, of Wilson & Bates, bar iron merchants, Philadelphia. The firm name of the new concern is Matlack & Bates, and the office is located in the Pennsylvania building, room 1119. This company will engage in the sale of pig iron and coke.

J. W. Coyle, who was connected with the Best American Calorific Co. until it retired from business, is now with the Rockwell Furnace Co., New York City, making a specialty of oil and gas furnaces for railroad work. He was formerly master blacksmith for the Lehigh railroad at Wilkesbarre, later in charge of the drop hammer and machine department at the forge shops of the Reading railroad, at Reading, Pa.

OBITUARY.

Lawrence P. Good, formerly of the White-Good Steel Co., Chicago, died in that city Jan. 6. Mr. Good went to Chicago in 1894, and was an active figure in the steel business there until a year ago, when he retired.

Henry L. Shippy, until recently a director, treasurer and manager of the Jno. A. Roebling's Sons Co., died Jan. 2, at his home in New York City, aged 64. He had been connected with Roeblings for 35 years.

Edwin Richardson, superintendent of the malleable department of Crane Co., Chicago, died in that city Jan. 4, aged 57. He was born in Nottingham, Eng., went to Chicago 44 years ago and had been associated with Crane Co. for the past 39 years.

John H. Lidgerwood, president and treasurer of the Lidgerwood Mfg. Co., of New York, died Jan. 1, at his home in Morristown, N. J., aged 80. Since the later part of September, he had suffered from neuritis. He was born in New York, but removed to Morristown when 16 years old. He married a daughter of the late Judge Stephen Vail, who founded the Speedwell Iron Works, at Morristown in 1812. When Mr. Lidgerwood took up the business, Professor Morse was making experiments with the telegraph in a building adjoining the home of Mr. Lidgerwood.

Daniel E. Hayes, one of the founders of the machinery manufacturing firm of Hinckley, Spears & Hayes, which was a forerunner of the Fulton Iron Works, San Francisco, died at San Francisco, Dec. 25, aged 72. He was a pioneer builder of San Francisco, going to that city from Brewer, Me., when a boy.

Stephen Warner Baldwin, for a long term of years sales agent of the Pennsylvania Steel Co., at New York, died Jan. 5 at Brookline, aged 76. He was well known as a mechanical engineer, being a member of the American Society and also an honorary member of the Engineers' Club of New York City, but had been retired for some years.

George F. Brown, who retired from active connection with the Pullman Co. two years ago, of which he was formerly treasurer, died Jan. 9 at Chicago, aged 67. He entered the employ of the Pullman Co. in 1871, as assistant to the general superintendent, becoming general superintendent in 1880. In 1885 he became general manager until 1905, when he was chosen treasurer.

Wm. C. Post, vice president and treasurer of the structural iron firm of Post & McCord, died Jan. 5, at Atlantic City. Mr. Post was 43 years old and a graduate of Stevens Institute. He was associatel with his father and Wm. H. McCord until their business was merged into the American Bridge Co. in 1900, when he was made chief draftsman, a position which he resigned six years ago on the organization of the Post & McCord firm.

John W. Nesmith, president of the Colorado Iron Works, died Dec. 17, at Denver, aged 75. He was born in Chillicothe, O., in 1834, and went to Denver in 1860. After being employed on railroad construction in 1879, he bought an interest in the Colorado Iron Works, then a small concern of which he became superintendent and general manager. In 1885, he became president of the company, and built under contract a number of smelters throughout the western mining country. He was a member of the National Association of Mining Engineers, of the Denver Society of Civil Engineers, as well as the Colorado Scientific Society, of Denver.

Money Was High and Stocks Declined

Rapid declines in stock prices with an advancing money rate were the features of the market in New York last week. Monday, call loans reached 14 per cent, the highest rate since the panic of 1907. Six railroad presidents conferred with the President on his message relative to interstate commerce and trust question, and the consolidation of the Guarantee Trust, Morton Trust and the Fifth Avenue Trust companies, all of New York, was announced. Tuesday, call loans were as low as 6 per cent; stocks were weak. Wednesday, the market continued weak. Rock Island broke 7 points. Gold exports to South America were resumed. The Big Four resumed dividends on common stock at the rate of 4 per cent and Atchison declared a quarterly dividend of 1½ per cent. Thursday, the discount rate of the Bank of England was reduced from 4½ to 4 per cent, and call loans in New York ranged from 4 to 7 per cent. The market for Steel common was nervous, on account of rumors of labor trouble. Friday, about one third of the business was in Steel common, which declined to the low point of the week. The market was dull. Call loans were 4½ to 5 per cent. Saturday the market was dull, but prices rallied under the leadership of Steel common. On the Philadelphia market, Cambria Steel advanced to a price above 52.

Call money was stringent only on Monday, after which lending by interior banks was active. Time money was not abundant, although the tone was easier toward the end of the week. Bank clearings throughout the United States were estimated at $4,860,258,429, the highest figure ever reached. The total for the week before was $3,138,045,529, and for the corresponding week last year, the figure was $3,770,445,702. The actual report of clearing house banks showed loans decreased $14,120,800; deposits decreased, $2,479,700; surplus increased $11,060,125, and the ratio of reserve was 26.3 against 25.3 the week before. Trust companies and non-member banks showed loans and investments decreased $19,644,600; deposits decreased $4,719,400, and the percentage of reserve 16.9, against 17.2 the week before. Gold exports from New York for the week amounted to $1,064,000, all to South American points. Gold imports for the week amounted to $63,236. The number of shares sold on the New York Exchange during the week was 5,495,600 against 3,419,000 the week before, and 5,985,742 the corresponding week of last year. Bonds, other than government bonds, were sold to the value of $1,075,000, against $201,000 the week before, and $747,000 the corresponding week of 1909.

THE LEADING INDUSTRIAL SECURITIES.

	Closing Quo. Jan. 8	Changes in week	Date 1909 Ann. M't'g.		Stock Outstanding	Basis	Dividend: Last Dividend	Dividend: Date Last Div. Pay.
Allis-Chalmers	15	— ¼	Sept.	2	$19,820,000		.....	.....
Allis-Chalmers, pr	53⅝	—1⅜			16,150,000	7 cum.	1¾ Q.	Feb., 1904
American Can	13½	— ¼	Feb.	2	41,233,300		.....	.....
American Can, pr	81	.....			41,233,300	7 cum.	1¼ Q.	Jan., 1910
Am. Car & Fdy	71½	— ½	June	24	30,000,000		½ Q.	Jan., 1910
Am. Car & Fdy., pr	119⅞	— ⅛			30,000,000	7 n. c.	1¾ Q.	Jan., 1910
American Loc	60⅛	—1⅝	Oct.	19	25,000,000	5	1¼ Q.	Aug., 1908
American Loc., pr	114½	— ½			25,000,000	7 cum.	1¾ Q.	Jan., 1910
American Ship	77	—1	Oct.	13	7,600,000	4	1 Q.	Dec., 1909
American Ship, pr	111½	.....			7,900,000	7 cum.	1¾ Q.	Sept., 1909
Am. Steel Foundries(new)	64¼	— ¾	Dec.	2	17,184,000		1¾ Q.	.....
Barney & Smith	40	.....	June	1	2,000,000	4	.....	Sept., 1907
Barney & Smith, pr	115	.....			2,500,000	8 cum.	1 Q.	June, 1908
Bethlehem Steel	33	—1	April	6	14,862,000		.....	.....
Bethlehem Steel, pr	66	.....			14,908,000	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	52¼	+3¼	Mar.	16	45,000,000*	3	¾ Q.	Aug., 1909
Cambria Iron	47	.....			8,468,000*	4	2 S. A.	Sept., 1909
Chicago Pneumatic Tool	40½	+1	Feb.	15	6,145,000	4	2 S. A.	Oct., 1907
Colorado Fuel	49	— ⅞	Oct.	18	34,235,500		1¾ Q.	April, 1902
Crucible Steel	17½	—1¼	Oct.	20	24,578,400		3½	.....
Crucible Steel, pr	93	— ⅜			24,436,000	7 cum.	1¾ Q.	Dec., 1909
Empire Steel	15	.....	April	27	1,254,770		.....	.....
Empire Steel, pr	80	.....			2,500,000	6 cum.	3 S. A.	July, 1909
Fay & Egan	95	.....	Feb.	18	1,000,000	7	3 S. A.	Nov., 1908
Fay & Egan, pr	120	.....			1,000,000	7 cum.	1¾ Q.	Nov., 1909
General Electric	159½	.....	May	11	65,179,600	8	2 Q.	Jan., 1910
Harbison-Walker	35½	+ ½	Jan.	18	18,000,000		2 Q.	Oct., 1907
Harbison-Walker, pr	94½	.....			9,600,000	6 cum.	1½	Oct., 1909
International Pump	54½	+1⅞	June	8	17,762,500		1 Q.	April, 1905
International Pump, pr	90	— ¼			11,350,000	6 cum.	1½ Q.	Nov., 1909
Lackawanna Steel	64	.....	Mar.	10	34,978,000		.....	.....
Lake Sup. Corp	28¼	+ ¼	Oct.	6	40,000,000		.....	.....
New York Air Brake	92¾	—2¾	June	17	10,000,000	8	2 Q.	Oct., 1907
Niles-Bement-Pond	104	.....	Feb.	3	8,500,000	6	1½ Q.	Dec., 1909
Niles-Bement-Pond, pr	104	.....			2,000,000	6 cum.	1½ Q.	Nov., 1909
Otis Elevator Co	55	.....	Mar.	15	6,375,300	3	1½ S. A.	Oct., 1909
Otis Elevator Co., pr	97	—2			6,295,000	6 n. c.	1½ Q.	Oct., 1909
Pa. Steel	65	.....	May	10	10,750,000		.....	.....
Pa. Steel, pr	115	.....			16,500,000	7 n. c.	3½ S. A.	Nov., 1909
Pittsburg Coal Co	27¼	— ⅛	Mar.	9	28,104,600		.....	.....
Pittsburg Coal Co., pr	83½	— ½			27,071,800	7 cum.	1¾ Q.	Jan., 1910
Pressed Steel Car	51	— ¾	Feb.	17	12,500,000		1 Q.	Aug., 1904
Pressed Steel Car, pr	107½	+1½			12,500,000	7 n. c.	1¾ Q.	Nov., 1909
Pullman	191¾	—1¾	Nov.	10	100,000,000	8	2 Q.	Nov., 1909
Railway Stl. Spring	49¼	—1⅝	Mar.	4	13,500,000	2	1 S. A.	Oct., 1908
Railway Stl. Spring, pr	104	—2¾			13,500,000	7 cum.	1¾ Q.	Dec., 1909
Rep. Iron & Steel	44¾	—1¾	Oct.	20	27,191,000		.....	.....
Rep. Iron & Steel, pr	103¾	— ½			20,416,900	7 cum.	1¾ Q.	Jan., 1910
Sloss-Sheffield	86	— 1	Mar.	10	10,000,000	5	2 Q. †	Nov., 1909
Sloss-Sheffield, pr	117	— ½			6,700,000	7 n. c.	1¾ Q.	Jan., 1910
U. S. Pipe & Fdy. Co	31½	—1⅛	June	23	12,106,300	2	1 Q.	Dec., 1907
U. S. Pipe & Fdy., pr	83⅜	— ¾			12,106,300	7 n. c.	1¾ Q.	Dec., 1909
U. S. Steel	88¾	—2¼	April	19	508,302,500	3 n. c.	1 Q.	Sept., 1909
U. S. Steel, pr	124⅝	— ⅜			360,281,100	7 cum.	1¾ Q.	Aug., 1909
U. S. Steel, 5s	104¾	— ⅜			463,798,000	5	.....	.....
Va. Iron, Coal & Coke	73	— ¾	Sept.	21	9,073,680		.....	.....
Westinghouse Elec	81½	—1½	June	16	27,173,200*		1¾ Q.	Oct., 1909
Westinghouse Air Brake	145¼	—3¼	Oct.	5	14,000,000*		4 Q.	Oct., 1909

Par value of shares, $100, except those starred (*), $50.
†Includes deferred dividend of ¼ of 1 per cent.
‡Return on investment.

Copper Stocks.

New York. — Amalgamated Copper closed 88⅜, a decrease of 2⅛.

Boston.—Butte Coalition closed 27¼, a decrease of 1⅜; Calumet & Arizona closed 100½, decrease of 2; Calumet & Hecla closed 670, decrease 15; North Butte Mining closed 42¾, decrease 7; Quincy Mining closed 88, decrease 4.

Financial Notes.

The International Steam Pump Co. has declared the regular quarterly dividend of 1½ per cent on preferred stock, payable Feb. 1; books close Jan. 20. The Canadian Car & Foundry Co. has declared an interim dividend of 1¾ per cent on preferred stock, payable Jan. 10 to stock of record Dec. 31. The Westinghouse Electric & Mfg. Co. has declared the regular quarterly dividend of 1¾ per cent, payable Jan. 15. The Montreal Steel Works Ltd., has declared a regular quarterly dividend of 1¾ per cent on preferred stock, payable Jan. 8, and a dividend of 5 per cent on common stock, payable Jan. 31. The regular quarterly dividend of the American Rolling Mills Co., of 1½ per cent on preferred stock, will be paid Jan. 15 to stockholders of record Dec. 31.

THE IRON TRADE REVIEW

Devoted to Iron and Steel Manufacture and to the Machinery, Metal-Working and Foundry Trades.

PUBLISHED EVERY THURSDAY BY
THE PENTON PUBLISHING CO.
CLEVELAND.

BUFFALO.....932 Ellicott Sq.
CHICAGO.....1328 Monadnock Blk.
CINCINNATI....First National Bank Bldg.
NEW YORK.....1005 West Street Bldg.
PITTSBURG.....510 Park Bldg.
SEATTLE.....302 Pioneer Bldg.
WASHINGTON, D. C.....Post Bldg.

Subscription, United States and Mexico, $3.00 per annum. To Canada and Foreign Countries, $4.50. The price of copies issued three months or more previous to date of current issue will be 25 cents each. Advertising rates furnished on application.

Change of advertising copy must reach this office ten days preceding date of publication.

The Cleveland News Co. will supply THE IRON TRADE REVIEW through the regular channels of the American News Co.

European Agents: The International News Company, Breams Building, Chancery Lane, London, E. C., England.

ENTERED AT THE POST OFFICE AT CLEVELAND AS SECOND CLASS MATTER.

PRINTED IN AN OPEN SHOP.

COPYRIGHT 1909 BY PENTON PUBLISHING CO.

THE AVERAGE PAID CIRCULATION OF THE IRON TRADE REVIEW FOR THE ISSUES OF THE FOLLOWING MONTHS WAS:

January	5,506
February	5,346
March	5,396
April	5,508
May	5,533
June	5,551
July	5,572
August	5,597
September	5,609
October	5,628
November	5,634
December	5,662

January 13, 1910

STEEL FOR RAILROADS.

Railroad expenditures involving iron and steel consumption promise to be materially larger this year than they were last year, but the general opinion seems to be that there is no immediate prospect of a restoration of the exceptionally heavy rate of buying maintained in 1905 and 1906. It has not become easy again to finance railroad securitie. While the sharpest effects of the panic of October, 1907, soon wore off, the financial conditions which produced that panic are necessarily slow in righting themselves. The iron and steel industry is prone to regard everything as either "before the panic" or "after the panic," and not unnaturally, since that very panic month showed the record production of pig iron in the United States, and the record low production for many years was reached less than three months after the panic. As to financial conditions affecting the floating of railroad securities, however, October, 1907, by no means represented the time of the inception of the new order of things. Long before that memorable month, the railroads had been forced to curtail their new engagements because money was hard to get. The iron and steel industry was slow to feel the effect, chiefly because orders had been placed for delivery so far ahead.

The difference in point of time between the buying of railroad cars, for example, and the time of building the cars, is illustrated clearly and forcibly by the valuable statistics gathered by the *Railroad Age Gazette*. Taking freight cars only, the figures are as follows:

NUMBER OF FREIGHT CARS:

	Ordered.	Built.
1901	193,439	136,950
1902	195,248	162,599
1903	108,936	153,193
1904	136,561	60,806
1905	341,315	165,455
1906	310,315	240,503
1907	151,711	284,188
1908	62,669	76,555
1909	189,360	93,570

The above table covers two periods of depression. The 1903-04 depression affected the iron trade chiefly in 1904, for pig iron production in 1903 slightly exceeded that of 1902, while 1904 showed a material decline. It was in 1903, however, that car buying fell off, by over 40 per cent, while the cars built in 1903 showed but a slight decrease. In 1904, on the other hand, car buying increased materially, while car building suffered a decrease of more than 60 per cent. Coming to the prosperous period, it will be observed that 1905 was the year of heaviest buying, with 1906 a close second, but it was 1907 which showed the heaviest building, chiefly because the car shops had been crowded and could not fill the orders sooner. The year 1908 was bad for both orders and construction, but 1909 showed a big increase in orders, though not in construction. Nearly twice as many cars were ordered in 1909 as were built. The buying was late in the year, and just on the strength of that spurt in buying the iron trade is already furnished a considerable tonnage for this year.

What is most important to observe, however, is that the buying of cars began to decrease even in 1906, long before the panic. Recovery is likely to be relatively slow also. Necessarily there has been heavy buying of late, because of the small buying in 1907 and the still smaller buying in 1908. A great deal of business backed up; part of this has come out, and there is probably considerably more to come out in the next few months, but in the long run the railroads are hardly likely to have another burst of buying like that of 1905. The buying will likely be more evenly distributed, over a period of years.

The recent pinch of adversity set the railroads to thinking harder than ever that more brains should be mixed with their equipment, in order that better results should be obtained. The latest reports on car performance show a fair measure of improvement. From December, 1907, to July, 1908, inclusive, each month showed an average of less than 350 ton-miles per day, excluding surplus cars, while each month since then and through June, 1909, the month just reported upon, has shown more than 350 ton-miles per day. Comparing the same periods, the average earnings per car per day have increased from $2.25 to $2.50, or 11 per cent. That is a very substantial result to be achieved in such a comparatively short space of time, and the railroads doubtless expect the good work to go on.

While the railroads have been loud in their complaints lately of the increased cost of labor and supplies, it is somewhat improbable that there will be further increases along these lines, and if the railroads can get better service and better earnings from their equipment, they will have more money to spend through surplus profits. The iron industry is glad to get railroad orders at any time, but has always complained that the railroads are very irregular customers. They have been so because it was borrowed money, rather than earned money, they were spending. If in future they are unable to borrow as much, but can earn more, their purchases are likely to be more regular.

The iron industry is not dependent upon the railroads for tonnage to anything like the extent it once was. Year

by year, comparisons can be made of the relative production of different finished steel products, showing that railroad material has not gained in tonnage in the same ratio as have other commodities. Without going into statistics, a proof of the tenacity of outside buying is furnished by the experience of 1908, when the railroads were buying scarcely anything. The less a given steel product was adapted to railroad work, the less it was affected by the depression. The wire trade lost but little tonnage, while sheets, tin plates and pipe did fairly well. Rails and structural material were hit hardest. In the revival of last summer and fall, it was steel bars, going to the farmers, ultimately, and the ordinary consumers, which led in the improvement. There is no relatively important new construction at the present time looking to rails, plates or shapes, but there is heavy new construction in wire, pipe, sheets and tin plates, lines which were not especially hard pushed in 1905-06-07. More and more, the iron and steel industry is passing from its dependence upon the railroads for business.

TRIBUTES TO THE MEMORY OF DR. CHARLES B. DUDLEY.

With the passing away of Dr. Charles B. Dudley, whose death was announced in THE IRON TRADE REVIEW, Dec. 23, 1909, the engineering world has lost one of its most distinguished scientists. The pre-eminent position, which he attained as a testing engineer, received full recognition from others working in the same field, and they delighted to honor him with the highest positions in the world's most eminent technical and scientific societies. At the time of his death, he was president of the International Association for Testing Materials, American Society for Testing Materials, Bureau for Safe Transportation of Explosives and other Hazardous Materials of the American Railway Association, and chairman of the committee on explosives of the American Railway Association.

Dr. Dudley's contributions to engineering progress have been so numerous and along such varied lines, that any attempt to enumerate them would necessitate a review of the advancement of testing engineering during the past 35 years. Among those with whom he was associated in committee work, principally in the formulation of standard specifications for various materials, his death is keenly felt, as the following tributes to his memory, written in response to a request by THE IRON TRADE REVIEW attest:

By Dr. Henry M. Howe.

The life of Dr. Charles B. Dudley was a very great object lesson to the great number of men who have had the privilege of either coming directly under the influence of his personality, or learning of his career.

That he was absolutely fearless, honest, and upright in all his relations was so evident, that it immediately impressed all those who met him. His character stood out at once on his face and in all his actions. But the value of his example lay not in these qualities, admirable as they are, because these he shared with so many others. It lay rather in the combination of these sterling qualities with his kindness and gentleness of heart and unselfishness on one hand, and his good, hard, sound, common sense, and his power of execution on the other hand. It was this combination of these three sets of qualitities that made his example so valuable. The degree of fearlessness and independence, which he showed, does not so often go hand in hand with such great kindness and generosity.

It must have been of the greatest value to an enormous number of young men, whose characters are forming, to have before them the object lesson that a man may be as absolutely independent and fearless as Dr. Dudley was, and at the same time may rise to such eminence and be so absolutely beloved by everybody. Let us hope that they have taken to heart the lesson that the secret of his success, in spite of his fearlessness, was that very kindness of heart and that good sense and good judgment, which were so characteristic of him.

It is not easy to think of a life which has been a fuller inspiration to his fellows than Dr. Dudley's. If there is one respect in which it fell short of appealing most strongly to a very large number of young men, it was perhaps through his very highest virtue of all, his perfect unselfishness. Had he amassed a fortune, as he might have done, and as some who share his qualities in a very high degree have done, I am inclined to think that the immediate influence of his life on younger men, as a force tending to move and mould their careers, might have been greater. But I further believe that his not having amassed a fortune, if I am correct in supposing that he did not, was after all only one of his greatest merits, in that it was a symptom and result of his great unselfishness. If such a degree of unselfishness lessens a man's immediate influence on his fellows, it is simply because he is on an ethical plane so high as to be somewhat out of their reach, that he is to that extent one calling in the wilderness. And yet this call cannot be in vain. If that extreme unselfishness is above the heads of the great masses of men, there is also a very considerable number of men above above whose heads it is not, and to that number of men this quality of unselfishness must have appealed in a very high degree. Thus he influenced the leaders. Through those men to whom this quality appealed then, I believe that he will indirectly and vicariously appeal with great effectiveness, not only to us of today, but to those who will succeed us.

None of us could ever come away from under his presidence at Atlantic City without feeling a certain ennobling and lifting influence which his personality had upon us. This we cannot have helped distributing to others, and they in turn to others, and so on. The ripple, which a stone cast into the ocean sets up, persists, though it cannot be traced, to the other shore of the Atlantic. The influence of Dr. Dudley's life and of all such lives will go on indefinitely. As Emerson says:

"The word unto the prophet spoken
Was writ on tablets yet unbroken."

By Robert W. Hunt.

My acquaintance with Dr. Dudley began in 1881 in connection with the well-known discussion upon Bessemer steel rails during the proceedings of the American Institute of Mining Engineers. At that time, he was, as he remained until his death, the chief chemist of the Pennsylvania railroad, and as such treated the subject from the railroad or consumer's point of view, while I was a steel rail maker, and I thought I had a better general knowledge of the subject than he; at all events, we were quite far apart in some of our views, and neither of us hesitated to put such differences into words. Perhaps the very heat of our discussion served to weld our friendship. It certainly dated from that time, and increased to affection. Capt. Wm. R. Jones was an active participant in the rail discussion during the Philadelphia meeting of the Institute, which was held in the Franklin Institute Hall. The meeting was, speaking mildly, a warm one, and the mid-day adjournment was a relief to all. Capt. Jones, D. N. Jones and I walked up Chestnut street together, and, as we reached Bailey's jewelry store, the captain proposed that we buy a little present for Dr. Dudley to show him that while we were 'down on' his views on the steel rail question, we could not help liking him. We bought and gave him a scarf pin, which he accepted, and, I believe, used during the rest of his life.

Dr. Dudley's laboratory at Altoona was among the pioneer ones, if not the very first one to be established by an American railroad company, and, sustained as he was by the management of that organization, he did more to standardize the chemical requirements of specifications for railway materials than any other one man. He enjoyed the absolute confidence of his superior and associate officers, and his honesty and fairmindedness commanded the respect of all with whom he came in contact. His unselfish devotion to the interests of the American Society for Testing Materials, and his position in the scientific world, well entitled him to its continued presidency. His loss to it is all the greater in view of next year's international meeting to be held in this country, that decision being largely through his personal presentation of the American invitation at the European meeting.

Dr. Dudley was called away long before his life work was completed, and the world has lost one of its best. To know him was to love him.

By Dr. Richard Moldenke.

Dr. Dudley was an exceptional man in every way. An ideal presiding officer, fair and kindly in his decisions. Aiming only for the best and most advanced, he helped to keep his company at the head of the procession. The one fact, that he was universally conceded to be the permanent president of the American Society for Testing Materials shows what a wonderful hold he had on the affections and confidence of his fellow men. Too bad that he could not enjoy the crowning glory of his career, the presidency of the International Association, to which I saw him elected.

By R. D. Wood.

In common with everyone who came in touch with Dr. Dudley's personality or knew the variety and thoroughness of his equipment, we feel that the world has suffered a marked and distinct loss—all the greater because the doctor's chief work is only in the formative condition—so that it will be difficult to find anyone who will take up the details and push them forward to as harmonious a finish as his broad experience would have enabled him to have done.

By Charles L. Huston.

I have always considered Dr. Dudley the fairest and clearest-headed man I knew amongst the leading testing engineers with whom I have had dealings, and I think the sentiments of a very large circle were expressed in a remark by one of the members of a party enroute to his wedding, that among his large circle of acquaintances every one wished Dr. Dudley well.

MACHINERY SELLING COMPANY.

The Buffalo Tool & Supply Co., Buffalo, has just been incorporated by A. B. Kellogg and Charles Park, of Buffalo, and Myron Grenell, of Waymart, Pa., for the purpose of buying and selling machinery and its accessories. It has secured the services of Charles Hood, for many years connected with the Buffalo Tool & Machine Co., as manager. The company advises that it will be pleased to receive catalogs and prices to dealers on the various makes of machinery in the wood-working line. Its main office is located at 15 West Swan street, and its warehouse and yard on Henry street, Buffalo.

ADDING TO ITS MILLS.

The Blue Island Rolling Mill & Car Co., works and general offices at 124th street and Marshfield avenue, Chicago, advises concerning its plans following the change of name from the Blue Island Car & Equipment Co., that it is erecting a steel building 87 x 250 feet in which to install a 20-inch mill and four double busheling furnaces. Its 10 and 18-inch rolling mills have been operating since Sept. 1 and after May 1 it expects to have an output of merchant bar iron of 250 tons daily.

RAILROADS BUY ABROAD.

British Railroads, in Buying From German Steel Works Arouse Comment.

Widespread comment has been aroused in Great Britain through the recent action of two or three important railway concerns in purchasing supplies from German steel manufacturers, regret at the loss of this business being all the keener because of the relatively little business of this character now on the books of such concerns in Great Britain. This action apparently was given ample publicity by the railroads, with the result that on later purchases of 1910 supplies extremely low prices were made by British concerns. One authority suggests that the placing of rail orders abroad merely evidenced the workings of the International Syndicate in apportioning as best it could orders which were not sufficient to go around.

The Ironmonger, of London, sees in the recent developments, however, the existence of a concerted policy on the part of the British railway companies to resist overcharge. Commenting further on this matter, this authority says:

The railway companies are among the best customers of our steelmakers, and the apparent readiness with which for years they have consented to pay such prices as the manufacturers felt disposed to fix has caused them to be regarded as fair game for providing big profits. In the course of time the manufacturers of material have formed "rings" and syndicates, which have deprived the railway companies of the advantages of competition usually enjoyed by traders, and, lately, the companies have practically been face to face with entire absence of competition, since all the makers have agreed to demand a uniform figure. Occasionally one railway company or another has placed an order abroad, but the traffic boycott by all sections of the steel trade which followed such a manifestation of independence discouraged repetitions of the experiment. But the railway companies are in a more independent position at the present time, as the result of the various working agreements and amalgamations which have been carried out of late, and it has become very difficult to play off one company against the other in the old ways. If all the companies serving the iron and steel districts were now to act together in buying foreign material, it would be very difficult for the manufacturers to defeat that step by threatening a punitive boycott. Still, it may be taken for granted that the railways would rather place their orders at home than abroad, and that so long as British prices approximate those of the German makers they are quite content to pay the former. They assert, however, that the British steel firms could lower their rates considerably and still have an ample margin of profit, and the steel manufacturers will probably adopt the hint conveyed by the Krupp transactions and revise their quotations. Whatever may have been the case in former years, the present conditions of railway working make the strictest economy essential.

LABOR LEADERS BUSY

And Hope to Extend the Eight-Hour Day on the Pacific Coast.

Preparations are being made by the San Francisco Iron Trades Council for the big task immediately ahead of it—that of spreading the eight-hour day on the Pacific coast. The movement will be a concerted one on the part of the molders, the machinists and the patternmakers. The molders will be directed by John I. Nolan, the machinists by E. H. Misner, and the patternmakers by John W. Sweeney. These men are all members of the San Francisco Iron Trades Council and represent some of the best timber in the union labor ranks on the Pacific coast.

THE IRON TRADE REVIEW is reliably informed that the attack will at first be concentrated on Los Angeles, Cal., but will soon extend to the north coast, including Portland, Tacoma, Seattle, Everett, Bellingham and Spokane. The hope of the union leaders is to effect the adoption of the eight-hour day throughout the Pacific coast by means of organization in the ranks of the workmen utilized to bring pressure to bear upon the employers.

PROPERTY FORMALLY TRANSFERRED.

Following upon the increase of its capital stock to $20,000,000 the Baldwin Locomotive Works had conveyed to it a few days ago the Philadelphia property of Burnham, Williams & Co., the old co-partnership operating the Baldwin works. The new company, known hereafter as the Baldwin Locomotive Works, has let a contract to the Belmont Iron Works, of Philadelphia, for fabricating and erecting structural steel work at the Eddystone, Pa., plant, now in course of construction.

The Toledo Furnace Co. has filed a petition in common pleas court at Toledo, O., asking for the vacation by the city of about 20 acres containing a number of alleys and a street continuation, between Front, Caledonia and York streets.

AMONG MACHINERY MAKERS.

PITTSBURG

While Much Mill Work Will be Done, Yet Contracts Hang Fire.

Office of THE IRON TRADE REVIEW,
510 Park Building, Jan. 11.

A vast amount of mill work is hanging fire and prospective buyers appear in no great hurry to close contracts. This is partially explained by the fact that present deliveries on mill machinery are far in arrears, averaging about six months where orders are taking their regular turn upon the books of builders. Some large interests which are planning very extensive improvements are expecting that they will scarcely have their installations complete before a year has passed. Where premium prices are being paid in some cases, work is being pushed through the shops in a shorter period. At the same time, there appears to be a more conservative attitude in the market toward giving the final word to contemplated enlargements of iron and steel capacity. This development is not surprising in view of the enormous amount of work placed or now actually under construction.

The roll situation continues one of heavy demand, and prompt shipments ordinarily cannot be obtained, as all the shops are well filled with work. Makers of steel rolls have posted an advance of 10 per cent upon their product but there has been no change in the price schedule applicable to sand- and chill-cast rolls, which is the same as that prevailing the past year. There is a better demand for machine tools and the prospects of a heavier buying in this territory are more promising. For the smaller tools, including the pneumatic lines, the buying power of the market is excellent and some makers report extremely heavy sales in the Pittsburg district during the month of December.

The Rainey coke interests which recently purchased 600 additional acres of Connellsville coking coal in Luzerne and Redstone townships, Fayette county, Pa., are making the preliminary arrangements for the erection of a large plant which will consist of between 500 and 600 ovens. The plant will be a strictly modern one and the design of ovens will be that of the longitudinal type invented by T. J. Mitchell, general manager of the Rainey interests in the Connelsville region.

The Westinghouse Machine Co. has taken a contract from the Western Construction Co. for a 1,500 horsepower bituminous gas producer and a 1,500 horsepower gas engine direct connected to generator for a water line to be built from Portales, N. M., a distance of 30 miles through the Pecos valley. The plant is to be operated for the irrigation of the district, in which the rain fall is light. The water is to be obtained from artesian wells. The region abounds in low grade bituminous coals and the gas producers will be of a peculiar type of construction to accommodate themselves to the use of this fuel.

The Jones & Laughlin Steel Co. has placed an order with the Westinghouse Machine Co. for two 2,500 horsepower steam turbines direct connected to electris generators. The equipment is for installation as a power unit for the company's new works at Aliquippa, Pa.

Considerable new equipment will be required by the Republic Iron & Steel Co. in the rebuilding of the machine shop at the Mahoning Valley works, Youngstown, which was destroyed by fire recently. Work upon the reconstruction of the shop will begin as soon as the insurance is adjusted.

The National Roll & Foundry Co., Pittsburg, has just completed the shipment of a hydraulic shear, roller table and 100 rolls for the new wire plant of the Southern Iron & Steel Co. at Gadsden, Ala. The rolls represent the complete equipment of this order for the new plant. The company has also just shipped a 42-inch roll lathe to the Osterburg Sheet & Tin Co, Waynesburg, Pa.

The Cambria Steel Co. has awarded the contract to the Morgan Construction Co., Worcester, Mass., for the rod mill and finishing equipment for the new wire plant to be added to the company's operations. No action has been taken on other finishing capacity which the company has had in contemplation.

The borough of Etna, Pa., will probably shortly proceed with the erection of a new public electric light plant. The plant formerly operated was recently destroyed by fire and the borough council has equipped two plants temporarily pending the construction of a new station.

Contracts for the equipment for the extensive additions to the plant of the American Rolling Mill Co., Middletown, O., are expected to be placed within the next several weeks. The improvements include billet and sheet bar, plate, jobbing and a number of finishing mills as well as additional open-hearth capacity.

NEW YORK.

Lathe Prices Advanced, and the General Price Tendency is Upward.

Office of THE IRON TRADE REVIEW,
Room 1005, No. 90 West St., Jan. 11.

The local machine tool trade has opened the year in a thoroughly satisfactory manner. The business closed during the opening week was large, although including only one or two lists of importance, and the inquiry now pending with prospect of early decision is encouraging. The first of the year witnessed a general change in the prices of lathes, growing out of the standardization plan decided upon at a meeting of the leading manufacturers early in December; on practically all makes the change was upward, but no other advances of importance have developed, although the tendency in all lines is toward a higher level.

One of the largest factors in the trade finds that its small tool business during 1909 was the largest in its history, explaining this in large part by the steady and insistent demand from the automobile industry. This same interest has made very great inroads into the large stock of heavy machine tools which it accumulated during the depression, and finds that the weekly run of its orders at present is about equal to capacity. There is still an absence of buying on the part of the railroads and only light purchasing by the equipment companies, with the exception of the locomotive makers, the largest two of which have been and are still buying generously, but it is anticipated that the recent heavy purchases of rolling stock will compel the placing of important machine tool business by both railway shops and the builders of this equipment.

The amazing extent to which the automobile industry is contributing to the activity of the machine tool trade continues to be shown in numerous directions. One make of milling machines much in demand for this class of work is now booked full up to December and deliveries are steadily becoming more remote on all machines employed by motor car makers. Estimates of the probable number of cars to be turned out during 1910 run as high as 200,000, and a good many plants are contracting for their materials on a basis to indicate that, provided this ratio is carried out in other plants, this estimate will not prove excessive. The maximum output of a good many manufacturers for 1910 is already sold out, this applying both to costly and to some

low priced cars. In view of these conditions the continued purchasing of machine tools by this industry is assured.

An important deal closed during the past week calls for about $75,000 worth of drop hammers, which will be supplied to the Packard Motor Car Co., Detroit, by one of the leading machine tool interests.

Makers of industrial cars report a considerable number of inquiries in circulation, though including only a few of size. The United Fruit Co. inquiry, calling for 75 steel underframe flats of 60,000 pounds capacity, was taken by the Middletown Car Co. A large inquiry from a southern mining interest is near closing.

Contracts will shortly be let for four additional barge canal contracts, estimated at over $3,000,000, plans for which have been approved by the New York state canal board. These are excavating and dredging propositions, with the exception of the building of a dyke along the Oswego river, the cost of which is not important.

Among the improvements which the Baltimore & Ohio Railroad Co. is planning to make at Brunswick, Md., are a small machine and blacksmith shop. Contracts for the buildings were let recently.

CINCINNATI.

Machine Tool Demand is Maintaining Tone of Buoyancy.

Office of THE IRON TRADE REVIEW, First National Bank Bldg., Jan. 11.

The machinery and machine tool demand continues sufficiently active to maintain the generally buoyant tone with which the new year begins. There is a steady increase in demand for the heavier lines of machine tools, which until recently have not shared in the general improvement. Manufacturers report that eastern agents are regarding the outlook as more favorable and orders from this source are increasing. The Pacific coast trade is steadily improving. Philip Rowe of the Halidie Machinery Co., of Seattle, Wash., was a visitor to the shops this week and he predicts two or three years of good business on the Pacific coast. The boiler trade has been comparatively quiet since the first of the year but there are a number of installations under consideration which will probably be placed in the near future.

The expansion of business generally seems to have had an influence in making collections a little slow as the increased business is employing all the capital at the command of each concern.

The I. & E. Greenwald Co. has secured an order for a 250 horsepower engine for Fleischman & Co., and the F. W. Niedling Co., a large contract for ice machinery for the same concern. The I. & E. Greenwald Co. has also sold a 150-horsepower engine to be used in connection with the J. M. Clark ice plant, at Milford, O.

The R. K. LeBlond Machine Tool Co. reports a continued good demand and the outlook for the year excellent.

The Cincinnati Iron & Steel Co. has sold to C. L. Hills a large shear for use in cutting scrap. The shear was made by the Cedar Rapids Foundry & Machine Co.

The John B. Morris Foundry Co. is busy in all departments and is having a good demand for machine tools.

The call for wood working machinery continues to lag and for some unaccountable reason this branch of the machinery business has not responded with the improvement in other lines. There has been some improvement, but the demand is not yet normal in this branch of the machine industry.

MILWAUKEE.

Larger Concerns Adding to Plant Capacity—Demand Fire Protection.

Jan. 10.

One of the best indications of prosperity in the machinery manufacturing field of Milwaukee is the fact that practically all of the larger concerns are erecting new additions or new plants.

The Fred M. Prescott Steam Pump Co. is adding to its plant a machine shop 300 feet long; and an 80-foot extension to its foundry. The cost of these improvements will be at least $75,000, and with their completion 200 more men will be employed.

The Pressed Steel Tank Co. is building an addition to its shops 120 x 250 feet at a cost of about $30,000. Presses for the manufacture of the new seamless steel barrels are now being installed. The company will employ 150 more men next year.

The Kearney & Trecker Machine Co. is another West Allis concern which is rapidly coming to the front. At the present time it is trebling the size of its plant at a cost of $100,000. A central power house is also being erected. The concern will increase its force of employes from 125 to 375.

Representing an outlay of $400,000, the Allis-Chalmers Co. is erecting a new blacksmith shop and machine shop. In these shops will be placed the steam hammers and hydraulic presses. The new shops will mean the employment of 1,000 additional men.

The Sternberg Mfg. Co. is erecting a new $100,000 plant which will employ at least 250 men.

The Sterling Wheelbarrow Co. is erecting a new plant for the manufacture of iron wheelbarrows extensively used in concrete work. The new plant will consist of three brick buildings and will employ between 200 and 300 men.

The Gerlinger Steel Casting Co. is now completing plans for an addition to its plant to be erected next spring.

The Pawling & Harnischfeger Co., well known machinery manufacturing concern of Milwaukee, has been formally incorporated with a capital stock of $1,000,000.

As a result of the recent destruction by fire of the American Bridge Co.'s plant, Milwaukee manufacturers located in the Menomonee valley near the destroyed plant, are demanding better fire protection to minimize chances of a repetition of the calamity.

The plant of the Filer & Stowell Co, of Milwaukee, narrowly escaped destruction by fire this week when the south end of the company's machine shop was damaged to the extent of $3,000.

Th Milwaukee School of Trades, partially destroyed by fire recently with a loss of $25,000, has opened temporarily in a factory plant at Barclay and Oregon streets.

The Allis-Chalmers Co. is meeting with a record-breaking business at its West Allis and Milwaukee plants at the present time. Orders for heavy equipment are arriving from every part of the country, and seem to indicate much prosperity in the manufacturing field. Orders have been received from the following steel and machinery manufacturing concerns: Cambria Steel Co., Johnstown, Pa.; Minneapolis Steel & Machinery Co., Minneapolis, Minn.; Jones & Laughlin Steel Co., Pittsburg, Pa.; American Steel Foundries, East St. Louis, Ill. and at Indiana Harbor, Ind.; Lake Superior Iron & Steel Co., Sault Ste. Marie, Ont; Pullman Co., Pullman, Ill.; Industrial Works, Bay City, Mich. Orders from mining and power concerns include: Buckeye Mining & Smelting Co., Mansfield, O.; Nova Scotia Silver Cobalt Mining Co., Cobalt, Ont.; Cia Ben de Metales, Haciendas de San Francisco, Hidalgo, Mex.; Lluvia de Oro Gold Mining Co., Lluvia de Oro, Chihuahua, Mex.; Bear Lake Power Co., Montpelier, Idaho.

ACTIVE SEASON ON THE OLD RANGES

NEW COMPANIES IN IRON RIVER-STAMBAUGH DISTRICT

Exploratory Work Was Carried On in Several Fields During the Year, Adding New Bodies of Ore to Known Supplies — Preparations Are Being Pushed for Larger Output Next Year

MENOMINEE RANGE.

Approximately 5,000,000 tons of ore have been shipped from the Menominee iron range the past year. This production is not a record breaker, nevertheless it is a highly satisfactory achievement. The output has been almost double that of 1908, when the iron trade was depressed the country over, and it has been about equal that of each of the years 1905, 1906 and 1907, when the operations were conducted at a maximum rate of activity. It is expected that the shipments in 1911 will aggregate fully 6,000,000 tons. That production, in fact, could have been attained the past year, had operations been pushed to the limit. Development work has been carried on vigorously and there is now a larger number of mines than ever before. More properties, too, are being brought to the producing stage, and a number of them will enter the shipping list the coming season.

Mines that have been shipping for many years will be active for decades yet, and new deposits of merchantable ore are continually being found. Besides, there are tremendous bodies of low-grade material that will not be exploited until that time in the distant future when the cream has been taken and their use has become necessary. Most of the more recent exploratory work on the Menominee has been in Iron county, Mich., at the western end of the range, and it is there that the most important finds have been made. Particularly has this been the case in the vicinity of Iron River and its twin village of Stambaugh and in the country to the north of Crystal Falls.

Iron River-Stambaugh District.

No less than 15 companies are now operating in the Iron River and Stambaugh district. New comers the past year have been the Cleveland-Cliffs Iron Co., the Jones & Laughlin Steel Co. and the New York State Steel Co., which previous to that time had confined itself to the Mesabi range. The last named concern has taken over the Goodman and Gleason properties, in Sections 14 and 23, 43-35, and is proceeding with their development. The Interstate Mining Co. of the Jones & Laughlin interests is testing the Johnson and Olson properties.

The Cleveland-Cliffs Iron Co. has a considerable acreage of Iron county lands under its control. Most of its Iron county tracts are in Town 43-35 and Town 43-34. Much diamond drilling is under way. A local concern which has entered the exploratory field in the vicinity of Iron River is the Michigan Iron Mining Co. Lands directly east of Oglebay, Norton & Co.'s Berkshire mine have been acquired and are being tested.

A new shipper the past year has been Corrigan, McKinney & Co.'s Baker property, in Section 31, 43-24. The mine sent out 40,000 tons. Corrigan, McKinney & Co. also have recently taken up the development of the Tully or Houlihan tract at Stambaugh. Shaft sinking is now in progress and it is expected that shipments will be made the latter part of the year. The Huron Iron Mining Co., in which Ohio furnacemen are interested, has important holdings in the Iron River-Stambaugh region. Its Youngs mine is a fine proposition and has been given an excellent equipment. The shipments the past year were 155,000 tons. The company has options on three different tracts in Town 43-35 and is exploring all of them.

The Munro Iron Mining Co., controlled by the Buffalo & Susquehanna interests, has recently leased the Schiebler property, in Section 29, 43-34. Exploration there has been in progress for two years, and it still continues. The Munro company's Hiawatha mine, in Section 35, 43-35, has developed into one of the largest properties in the Stambaugh field. Much improvement work has been carried on the past year, aside from which shipments of 136,500 tons were made. The Niagara Mining Co., which is under the same control, is believed to have a mine in the Donohue property. This tract is in Section 23, 43-35. Ore has been encountered. The Niagara also has the McGovern property, in Section 22, 43-34, and the Purcell, in Section 14, 43-35. Drilling is in progress at both of them.

To the east of the Donahue, and in the same section, is the Mineral Mining Co.'s James mine. This property is developing into a very valuable proposition. The deposit is large and the ore is of excellent grade. No. 1 shaft has been put down to the 400-foot level the past year, and No. 2 shaft will attain the same depth before the winter is over. Improvement work either completed or projected is the construction of a machine shop and a boiler house and an engine house, both of the latter of concrete blocks, and the erection of a steel shafthouse and a number of additional dwellings. Some 20 or 30 more houses will be built at the James the coming season. Adjoining the James on the south, the Knowinski property is being developed by the Mineral company.

The Spies lands, in Section 24, 43-34, and the Barrass property in Section 35, 43-35, are being explored by Pickands, Mather & Co., of Cleveland. A new shipper of the Pickands, Mather & Co. group is the Fogarty, in Section 1, 42-35.

The Florence Iron Co., which had been drilling the land for nearly two years, now holds the Hall property under lease. This tract is in Section 19, 43-34, and is the reputed possessor of a very large deposit. Drilling still continues there and on adjoining lands, the whole comprising 80 acres. The Spring Valley Iron Co. expects to produce fully 100,000 tons of ore from its Zimmerman mine the coming season. The Zimmerman is in Section 7, 42-34, and apparently has a very large deposit. The mine is down to the fourth level. Much new machinery has been ordered and will be installed during the winter.

The Steel Corporation's Dober mine at Stambaugh is proving one of the big properties of the district. It has lately been provided with a steel shafthouse. This is at the No. 1 shaft, through which ore from the Isabella mine also is being taken.

The Isabella, which had been idle a number of years, has been reopened the past season.

Crystal Falls-Amasa Region.

An event of interest the past year in the Crystal Falls district of the Menominee range has been the action of Corrigan, McKinney & Co., in putting into commission the new shaft at their Tobin mine. This shaft is down to a vertical depth of 600 feet, sunk through slate and jasper, well removed from the ore body. It required almost two years to sink and equip it. The shaft is 22 by 6½ feet, inside of timbers, and it has four compartments. It has been provided with a fine equipment, which includes an ore crusher. Corrigan, McKinney & Co. have recently resumed operations at their Armenia mine. Some 150 men are employed and much development work will be done during the winter. The Armenia had been idle since the fall of 1907. The other mines of the company's Crystal Falls group which were closed at the same time are still inactive.

M. A. Hanna & Co., of Cleveland, are exploring the Quincy property, west of Oglebay, Norton & Co.'s Bristol mine, and the Monongahela tract, west of the Tobin mine. They also are testing the Victoria property. The shaft at the Hanna company's Hollister mine has been put down to a depth of 500 feet. The deposit is a narrow one, as far as developed, and the ore is very soft, so much so that the openings must be closely timbered with square sets, making the cost of mining greater than is usually the case with Crystal Falls properties. The MacDonald property, adjoining the Armenia, is being developed by the Huron mining interests, and the Gibson by the Rogers-Brown interests.

A mine which is being opened in the country to the north of Crystal Falls is the Channing tract, three miles north of Amasa. It is a property of Pickands, Mather & Co. The Channing has been provided with transportation facilities by the Milwaukee road and will join the ranks of the shippers this year. The ore is soft and very easily mined and runs well up in metallic iron. The Buffalo & Susquehanna interests are exploring the Wakefield lands, in the same district, and they have a drill in commission on the Holmes tract, in Section 6, 43-32, in the territory between Amasa and Crystal Falls. The Florence Iron Co. is operating in Section 15, 43-32.

The Steel Corporation is conducting diamond drill work in the vicinity of the old South Mastodon mine, in Section 13, 43-32. It is engaged in similar operations in Section 25, 43-34. This latter property, the Chekagon, lies southeast of the Chicagoan mine, midway between Crystal Falls and Iron River. The Chicagoan is in the hands of the Buffalo & Susquehanna people and is being given a thorough test. The shaft has been put down to the 500-foot level.

Central Menominee Fields.

Only two mines are in commission in the Wisconsin portion of the Menominee range. These are the Florence Iron Co.'s Florence property at Florence and Oglebay, Norton & Co.'s Buckeye property, near Commonwealth. The latter is a new mine and takes the place of the company's Commonwealth property, which has been worked out. The ore lens at the Buckeye is of considerable magnitude and the product runs about 54 per cent in metallic iron. The first shipments were made the past year. The Florence shipped 226,000 tons the past season, an outgo only a few thousand tons less than the record production of 1905. Oglebay, Norton & Co. and other interests have been exploring the Spread Eagle district the past season, but with what results is not known. This field is on the Wisconsin side of the Menominee river, midway between Commonwealth and Iron Mountain.

The Steel Corporation is to engage in extensive exploratory work on the east or Michigan side of the river, and between that point and Iron Mountain. Some work of a crude nature was done in that locality in the early days of the range, but the results were not sufficiently encouraging to warrant shaft-sinking. Deep drilling will now be done. Considerable development work is to be carried on during the winter at the Antoine Ore company's Traders mine, near Iron Mountain. The property, which is an open pit proposition, is to be prepared for a record breaking output in 1910. A contract has recently been awarded for the stripping of 50,000 cubic yards of overburden, the depth of which will average 25 feet. The Millie mine at Iron Mountain has recently suspended operations, but it is not expected that the shutdown will be of long duration. The Lake Superior Corporation is interested in this property and the ore produced the past season has been going to the company's Algoma Steel Works at the Canadian Soo.

Chapin Mine a Wet Proposition.

The Steel Corporation's Chapin mine at Iron Mountain, the giant of the Menominee range, shipped 585,000 tons the past year. This output is much less than the mine is capable of producing, it often having sent out upwards of 900,000 tons annually. The Chapin already has produced 17,000,000 tons since it was first opened, and it has tremendous reserves yet.

The Buffalo & Susquehanna people are sinking the shaft at their Munro mine at Norway to another level, about 75 feet, which will make the total depth 150 feet. The Munro is a milling proposition. The new level will open up a considerable body of ore and permit the employment of a larger force of men the coming season. A shaft which is a novelty of its kind has been completed the past year at the Penn Iron Mining company's Briar Hill property at Norway. This shaft is of concrete, is circular in shape and is down to the ninth level, a depth of about 800 feet. The only wood work is in the runners between which the cage is operated, and it is used there only so that the safety clutches may work successfully. There is being installed at the shaft a mammoth hoisting plant, the flywheel of which alone weighs 28 tons.

New Deposit at the Groveland.

The deposit at the Saginaw mine, formerly the Perkins, at Norway, has about petered out, and mining work has practically been suspended. Only 7,350 tons were shipped the past season. Pickands, Mather & Co. have restored to the active list the Quinnesec mine at Quinnesec and the Calumet and Hecla mines at Metropolitan, in the Felch Mountain district.

The Huron Mining interests are developing the old Groveland mine, in Town 42-29, and are meeting with their proverbial success in locating new ore bodies. The Breitung interests are drilling in the same vicinity.

The Chicago & Northwestern railroad, which still handles the bulk of the Menominee range ore traffic, notwithstanding that the Chicago, Milwaukee & St. Paul company has steadily been increasing its tonnage, is planning the construction of a new track from Florence to Iron Mountain, and it is likely that this line will be built this year. This improvement will give the Northwestern a double track all the way from Florence to the ore docks at Escanaba.

MARQUETTE RANGE.

The Marquette range was hampered by a shortage of labor the past year. Notwithstanding this handicap, mining, development and exploratory work were carried on with almost unprecedented vigor and the results have been gratifying. The production has been in excess of four million tons, which compares well with that of the best years in the

history of the region. The discoveries of the past few years have been of vast importance. Very large bodies have been added to the reserves of merchantable ore.

As on the Menominee, there are enormous bodies of low grade material in the Marquette region, but it will not be necessary to touch these for decades yet. Even now, in fact, the limits of the range are still to be determined. The discoveries of the new beds in the Negaunee and Swanzey districts have been followed by fully as important finds in the territory to the west of Ishpeming until it has come to be believed that there is an almost unbroken stretch of ore all the way from Ishpeming to a point beyond Lake Michigamme.

It was in the vicinity of the American mine, in this district west of Ishpeming, that the deepest diamond drill hole ever bored in North America was put down during the year by George J. Maas. The work was done by Cole & McDonald. The hole was bottomed at 3,265 feet. It required six months to sink to that depth. Just what was encountered in this particular hole is not known.

First Mine Being Opened.

The first of the prospective string of mines in the new district is now being opened by the Cleveland-Cliffs company. This is the North Lake property, on the shores of the body of water of that name. Development work was started a year ago. Two shafts are going down. One of these is being sunk in a swamp and is of concrete for the first 70 feet, the depth of the overburden. The second opening is a quarter of a mile distant. The mine will be a big one and the company is providing it with an extensive surface equipment. The air for the operation of the power drills at the North Lake mine is compressed at the Cliffs Shafts engine house at Ishpeming. It is delivered through a 6-inch iron pipe laid in a trench extending in an absolutely straight line for the entire distance of 18,000 feet.

It will not be long before the machinery at most of the Marquette range mines of the Cleveland-Cliffs company will be operated by electricity. Two central electrical stations are going into commission, one at the Maas mine at Negaunee and the other in the Swanzey district, some 20 miles south of there. Each plant is equipped with a 1,500-kilowatt turbine and generator.

Interesting Engineering Feat.

Another interesting work undertaken by the Cleveland-Cliffs Iron company on the Marquette range is the construction of a concrete-lined shaft in the Negaunee field, between the Negaunee and Maas mines. This shaft will be similar in style to that at the Penn company's Briar Hill property on the Menominee range, in that it will be circular in form, although materially larger, its diameter being 17 feet, as compared with 14 feet at the Briar Hill. The concrete is 18 inches in thickness. This lining is now going in, it being installed in sections from surface, but it will be the better part of the year before the shaft is ready for use. The shaft will have four compartments, will be equipped with steel and will be surmounted by a steel shafthouse.

In the construction of this shaft the first work undertaken was the extension of a "raise" from the bottom of the mine to the bottom of a test pit which had been sunk through 70 feet of sand to the ledge. The distance between the two points was 733 feet. The work was started Jan. 1, 1909, and was completed July 19. The outside dimensions of the "raise" were about 8 feet square.

The new shaft is 3,000 feet distant from the present hoisting shaft at the Negaunee mine, and it will replace both of the old shafts.

Idle Properties Resuming.

The Cleveland-Cliffs company is resuming operations at its Lucy mine at Negaunee, which had been idle six or seven years, and the Breitung interests are resuming work at the old Milwaukee and Davis mines, in the same locality. The Breitung Hematite, adjoining the same company's Mary Charlotte mine, has been restored to the active list after having been closed four years, and is being developed vigorously in the expectation of making heavy shipments the coming season. The Mary Charlotte, too, is being operated vigorously, with upwards of 400 men employed. A new hoisting plant has been installed at the No. 2 shaft. At Humboldt, at the western end of the range, the Breitung people are developing the Baron mine, first opened during the days of the Civil war.

The country to the south of Negaunee is receiving considerable attention. A great amount of development work is in progress in the Swanzey district, and much work is being done in the Cascade district. This latter field has been somewhat neglected in the past. The only producers the past year have been the Hanna company's Richmond mine and Oglebay, Norton & Co.'s Empire mine, the former with shipments of 80,000 tons and the latter with 106,500. Thos. F. Cole, of Duluth, and associates, who a year and a half ago purchased the extensive holdings of the Volunteer company, formerly controlled by the late General Alger of Detroit, have been exploring lands in the Cascade field the past year, as a result of which a shaft is now being sunk near Palmer lake.

The Cleveland-Cliffs company is spending a great amount of money in development work in the Swanzey country. New mines being opened there are the Kidder, Smith and Northwestern. Other properties, which are already on the shipping list, are the two Princetons and the Austin, Stephenson and Stegmiller, the latter a possession of the Steel Corporation. The ore deposits of the Swanzey district are very extensive, and eventually a much larger number of mines will be opened. It is in that territory that the Cleveland-Cliffs company has established the model town of Gwinn, already a thriving little city with numerous places of business and a great many dwellings.

Little Ore Left in Stock.

The new year starts in with very little ore in stock at Negaunee or Ishpeming, where the principal mines of the Marquette range are located. The companies have operated their properties briskly and have employed even larger forces than ever before. The operators are the Steel Corporation, Cleveland-Cliffs company, Jones & Laughlin, the Breitung interests and Republic Iron & Steel company. The latter is sinking a new shaft midway beween its Cambria and Lillie mines.

Ten miles west of Ishpeming is M. A. Hanna & Co.'s American mine. The property is employing 250 men, a force which will be considerably increased the coming season. The first work there was done in the early eighties. The property was in bad condition when the present operators took hold of it, and they have had to erect buildings, install new machinery, deepen the shaft and extend new levels, tedious and expensive business.

In the country to the west of the American, the Steel Corporation is operating the Champion mine, the Cambria Steel company the Republic, the Cleveland-Cliffs company the Imperial, and the Buffalo & Susquehanna people the Portland and Ohio. The Portland has been operated as an open pit proposition the past year, and the mining has been done by steam shovel. The old Stewart mine and adjoining lands, in the vicinity of the Portland, have been taken over by the Catherine Mining company, a newly organized concern, controled by the Graham Nut & Bolt company of Pittsburg, and exploratory work has been started.

GOGEBIC RANGE.

The past year on the Gogebic range has been the greatest in its history. The rail shipments included, the outgo has been over 4,000,000 tons, a mark never before attained. The product has come from 24 mines, the biggest shipper of which has been Ferdinand Schlesinger's Newport, with water shipments of 865,000 tons to its credit. The mines forwarded a total of 3,834,132 tons to Ashland, their

shipping port, and of that amount the Steel Corporation sent out 1,256,405 tons. The other operators ranked, in order, as follows: Ferdinand Schlesinger, 871,670 tons, this from the Newport and Anvil mines; Pickands, Mather & Co., 530,024 tons, from the Brotherton, Cary, Mikado, Pike and Sunday Lake; Corrigan, McKinney & Co., 441,995 tons, from the Colby and Ironton; Oglebay, Norton & Co., 401,552 tons, from the Castile, Eureka, Montreal and Ottawa mines; Cleveland-Cliffs Iron Co., 300,098 tons, from the Ashland and Iron Belt, and the Lake Superior Iron & Chemical Co., 32,388 tons, from the Yale mine. An important discovery of the past year was that at the Yale mine at Bessemer, where a rich deposit has been found at a depth of 2,000 feet.

The Germania mine at Hurley, which had been closed since the fall of 1908, resumed operations during the year, as did Ferdinand Schlesinger's Bonnie at Ironwood. The latter had been idle a number of months. Little mining has been done at Corrigan, McKinney & Co.'s Colby and Ironton properties at Bessemer since early last spring. However, there were very large stockpiles at both mines and the total shipments have been heavy.

Much New Construction.

A noteworthy feature of the Gogebic range operations of the past year has been the great amount of improvement work carried on by the United States Steel Corporation. At the Pabst mine at Ironwood there have been constructed a boiler house and an engine house, both approximately 50 x 120 feet, which are the finest structures of their kind on the range, with the possible exception of those completed not long ago at the Newport mine.

New construction at the Steel Corporation's Norrie mine is a boiler house, 50 x 52 feet, and an engine house, 40 x 112 feet, both equipped with new machinery. Between "B" shaft at the Norrie and "D" shaft at the East Norrie, a new shaft is being sunk in the footwall. It is inclined, has three compartments and is being provided with steel sets. A new laboratory and a crusher house have been built at the East Norrie.

East of Ironwood, the Steel Corporation is opening three mines, none of which have yet reached the shipping stage. These are the Davis, Geneva and Puritan. There is being sunk at the Davis a shaft which will be one of the deepest ever put down on the range, and one of the most substantial as well. The 2,000-foot point is not far distant. The shaft is 11 feet 10 inches by 19 feet 8 inches. The Davis has been provided with a boiler house, 50 by 60 feet, and an engine house, 50 by 140 feet. Underground, on the 1,200-foot level, is a duplex pumping plant.

At the Geneva, east of the Davis, the shaft is down below the 2,000-foot level; it is the deepest on the range, and in dimensions is 7½ by 10 feet. The Geneva tract comprises 160 acres, the same area as the Puritan and half that of the Davis. The ore body has been reached at the Puritan and a stockpile is being accumulated, but no shipments have yet been made. The shaft is not far from 1,500 feet in depth and is 8 feet by 18 feet 4 inches in dimensions. The newly erected boiler house is 50 by 52 feet, and the engine house 50 by 74 feet.

Expensive Shaft at the Atlantic.

The Atlantic mine, on the Wisconsin side of the Montreal river, is the most westerly Gogebic range property controlled by the Steel Corporation. Not much actual mining is being done at present, and this mostly in the old workings of No. 2 shaft, notwithstanding which 125,000 tons were shipped the past year.

A mile east of the Atlantic is the Steel Corporation's Plummer exploration. The shaft there is 7 feet by 19 feet 8 inches and is down more than 1,250 feet. Drifting is in progress. The shafthouse is of steel and is of recent construction. The boiler house is of the standard adopted by the company for the Gogebic range, this standard being maintained in the case of all the newer boiler houses, with variations in size according to the capacity of the steam plant.

Ottawa Holdings Enlarged.

Oglebay, Norton & Co. have increased their holdings on the Gogebic somewhat by acquiring a second forty-acre tract adjoining their Ottawa mine. The latest acquisition lies north and west of the Ottawa and is believed to contain valuable ore deposits. Oglebay, Norton & Co. operate the Montreal, Ottawa, Eureka and Castile mines on the Gogebic, and are developing a new mine in the Asteroids. The Cleveland-Cliffs company's Iron Belt property, on the Wisconsin side of the Montreal, forwarded only 40,000 tons the past season. The mine has not been much better than a "scram" for some time.

At the extreme eastern end of the range, much diamond drill work has been done the past two years in the vicinity of the old Copps property, six miles north of Marenisco. What the results have been is not known, however. Much the finest office building on the range has been erected the past year at Ferdinand Schlesinger's Newport mine. It is of red brick and Bedford limestone. The Newport is shipping ore all-rail to the Mayville furnace, and the Pike and the Yale are shipping to the Lake Superior Iron & Chemical Co.'s charcoal iron stack at Ashland.

RECORD-BREAKING YEAR EXPECTED.

All three of the Michigan and Wisconsin ranges are preparing for a record-breaking production the coming season. Mining operations were never conducted more vigorously. Large forces of men are employed, and the opening of interlake navigation in the spring will find millions of tons of ore in stock, ready to be forwarded to the docks. Everybody expects materially the biggest and most prosperous year in the history of the region.

AMERICAN STOVE CO. PROPOSES PROFIT SHARING.

The American Stove Co., which has plants located in Cleveland, Lorain, O., Mansfield, O., Chicago and St. Louis, is planning a profit-sharing scheme as well as a pension system for its employes. Directors of the company are said to have approved both plans and stockholders have been notified that at a meeting to be held Jan. 25 at Jersey City details of the profit-sharing plan will be discussed. They have just been asked to vote on the pension system.

PHILADELPHIA FOUNDRYMEN ELECTED OFFICERS.

At the annual meeting of the Philadelphia Foundrymen's Association, held Wednesday evening, Jan. 5, officers for the ensuing year were elected as follows: President, Thos. Devlin; vice president, E. E. Brown; treasurer, J. Thompson; secretary, Howard Evans. Executive committee: Chairman, Walter Wood; H. L. Holdeman, Thos. Eynon, Walter McDonald and S. S. Knight. Geo. C. Davis was re-elected chemist.

BRITISH PIG IRON OUTPUT.

The British Iron Trade Association reports the pig iron output in the United Kingdom for the first six months of 1909 as 4,715,679 tons, against 4,653,989 tons in the previous half year. An average of 313 furnaces were in blast during the first half, showing an average output of under 100 tons daily.

ANTHRACITE SHIPMENTS.

Shipments of anthracite coal in December were 5,775,438 tons against 5,827,938 tons in December, 1908. For the year to Dec. 31, 1909, the total shipments were 61,969,885 tons, against 64,665,014 tons in 1908.

SCRAP SECTION

Of the Payne Tariff Bill May be Amended in Present Session.

Office of THE IRON TRADE REVIEW,
Post Bldg., Washington, D. C., Jan. 11.

So much dissatisfaction is expressed in different quarters over certain features of the new tariff law and the interpretation which the customs officers of the government, notably the Board of General Appraisers, have placed upon the details of the measure that it will be a matter of some surprise if legislation is not insisted upon during the present session making necessary changes in the law. This may be accomplished by resolution only, setting forth the intent of the framers of the measure, where that can be done, and where it is found that the administrative officers are not adopting the views which were entertained by the makers of the act during its passage through congress.

The interesting feature of the present expressions of disapproval of the tariff law is that they are coming even more generally from the leading supporters of the measure, during its passage, rather than from those who met the bill with objections during its stormy trip through the two houses.

It is through some such plan, as is indicated by the suggestion of dissatisfaction among the Republican leaders, that there appears to be a chance, slight though it may be, for securing a modification of the tariff section relating to scrap iron and steel.

The customs officials are insisting that no interpretation save what they have placed upon the measure would be permissible in the present state of the law. They are noting the objections coming from the iron and steel manufacturers along the Atlantic seacoast, but say that no relief can be afforded unless congress shall remove the limitations included in the word "melted" which appears in the section. Some of the members of the congressional committees which had to do with framing the law are most active in insisting that a change must be made in this part of the new law.

As evidence, however, that it is not alone the scrap iron and steel matter that is brought forward as affording good and sufficient reason for some supplemental tariff action, it is pointed out in some quarters that other trades and industries are suffering because of the limitations placed in the law, particularly those relating to the "component articles of chief value" which go to fix the rates of duty in certain lines of goods.

The decisions of the customs officers up to this time have been in the direction of strict construction of the new law, and the result is that hardships are complained of not only by representatives of important domestic industries, but, also, by importers.

The customs officials are still wrestling with the details of the new drawback section of the law, which permits the manufacture of commodities from imported materials, duty free, where the finished product is destined for the export trade. The problem arising in this connection is the disposition of such waste or by-products which formerly had to be exported, but which, under the terms of the new law, are permitted to be retained in this country upon the payment of duty thereon. The troubles besetting the officials cover the matter of identification of imported materials, and the time at which duties are to be assessed upon by-products, whether at the time of importation of the materials or when the products manufactured therefrom are offered for export, and the by-products become subject to duty if retained in this country.

FURNACE CO. INCORPORATES.

The Eagle Iron Furnace Co., which proposes to operate the charcoal blast furnace at Attalla, Ala., has been incorporated with a capital stock of $60,000 through the following stockholders: Charles A. Lyerly and F. Giddings, of Chattanooga; N. L. Green and S. McGaughey, of Gadsden, and W. S. Shelow, of Attalla. The officers are: President and treasurer, Charles A. Lyerly; vice president, W. S. Shelow; secretary, F. Giddings. The Attalla stack has been undergoing extensive repairs and will likely be blown in shortly.

WILL BUILD PLANT.

The Beach Mfg. Co., of Grand Forks, N. Dak., advises that it has been incorporated with $50,000 capital stock, $37,500 paid in, to manufacture steel culverts, bridges and a full line of road-working machinery. It has let contracts for the erection of brick buildings and has purchased most of its machinery equipment from the Beach Mfg. Co., of Charlotte, Mich. The secretary and general manager is C. M. Porter.

Work on the construction of an addition to the galvanizing plant of the American Sheet & Tin Plate Co., at Scottdale, Pa., has been started, and will be rushed to completion as fast as possible, the additional room being greatly needed.

VALVE SEATS FOR LOCKS.

Bids to be Asked on Large Order of Steel and Iron.

Specifications have been forwarded to the states in order that bids may be requested by the Washington office for the seats and frames of Stoney gate valves to be embedded in the masonry of the twin locks at Pedro Miguel, and the upper twin locks and the Spillway at Gatun, says the Panama Canal Record of Dec. 22. Each of these two twin locks will require two sets of guard valves and 12 sets of operating valves; two of the latter for use at Gatun have already been contracted for, making the total number of operating valve chambers under the present specifications 22, ten for Gatun and 12 for Pedro Miguel. Three frames have also been requisitioned for the Spillway at Gatun dam, but they are not for the regulating valves that will finally be installed, but for use only during the construction of the spillway.

The present condition of work on the locks makes it desirable that the castings be delivered by April 1, 1910.

The valves for which these castings will form the chambers are for the main culverts by which water will be let into and drawn from the locks. Each valve is designed to operate in a well, traveling on two roller bearings with a span of 10 feet from center to center, fastened to the down-stream face of the wall casting. Each valve closes an opening 8 feet wide by 18 feet high. The valves are to be arranged in pairs separated by a pier. The gates will have a total play of only one-fourth of an inch, and the castings must, therefore, be carefully made and fitted together so that when they are assembled and the valve is in place there will be no interference or bad alignment which would hamper or cripple the operation. The contractor will be required to assemble the castings at some place in the states agreed upon for inspection by an agent of the commission, and install a template of a complete valve and operate it to the full range of motion without any interference with free and perfect operation.

The material required for 22 sets of valve frames is as follows:

	Pounds.
Cast steel, open hearth	404,800
Cast iron	2,747,469
Structural steel, open hearth, roller tracks to be made from rolled bars	394,854
Rail, standard	47,843
Steel bolts and nuts	78,828
Bronze bolts, Tobin	338
Cast iron washers	28,565

LAKE SHIP YARDS

Launched 39 Vessels Last Year, Including 17 Bulk Freighters Hav-

During 1909, exclusive of Canadian yards, lake ship yards launched 39 vessels, of which 17 were bulk freighters, 5 package freighters, 5 passenger steamers, 6 tugs, 5 lighters and 1 survey boat. Of this program the American Ship Building Co. built 20, 13 of them being bulk freighters, 2 package freighters, 2 passenger steamers, 2 tugs and 1 oil barge. The Great Lakes Engineering Works, Detroit, built 10, of which 3 were bulk freighters, 3 package freighters and 4 lighters. The Toledo Ship Building Co., Toledo, O., launched 1 bulk freighter; the Manitowoc Dry Dock Co., Manitowoc, Wis., 2 passenger steamers, 1 survey boat and 1 lighter; Johnston Bros., Ferrysburg, Mich., a passenger steamer and a tug; John Bateman, Buffalo, N. Y., a tug; and Laird & Son, Ashtabula, O., a tug.

These 17 bulk freighters have a carrying capacity of 157,300 tons on a single trip or 3,146,000 tons in an average season.

FORMALLY ORGANIZED.

The reorganization of the National Machinery Co. under the laws of Ohio has been effected at Tiffin, O., the following new directors being elected: E. J. Barney, of Dayton; Charles J. Moore, James B. Brady and H. M. Reynolds, of New York; M. Frost, L. Selle, William L. Hertzer, H. J. Weller and Mrs. Augusta Rohn, of Tiffin, O. The officers of the company are: President, M. Frost; vice president, H. M. Reynolds; secretary and general manager, E. R. Frost; treasurer and registrar, W. L. Hertzer. The board of directors includes: L. Selle, W. L. Hertzer, E. R. Frost, Mrs. Augusta Rohn and H. J. Weller. A deed formally conveying the property of the old company to the new has been filed, and the new company has been capitalized at $1,500,000, one-half of which is preferred and one-half common stock. The old company had been capitalized at $1,000,000 under the laws of New Jersey.

DEVELOPMENT AT BUTTE.

In no year in the history of the Butte district has so much work in the nature of development been done as during the past 12 months, says the *Mining World*. It exceeded by 50 per cent even the large amount of work that was done two years ago during the height of the copper boom, when a score of new companies were engaged in the work of developing new mines. At that time, however, less work of that character was done by the large companies. The past year the small and numerous new companies were entirely out of it, and the work was confined to the large companies, including the Boston & Montana, North Butte, Butte Coalition, Anaconda, Parrot, Trenton and others. Several companies have recently resumed development work.

BOSTON ENGINEERS TO BANQUET.

Boston, Jan. 6.

Arrangements have been completed for a banquet Jan. 21 at the Hotel Somerset, to be tendered jointly by the American Society of Mechanical Engineers, the Boston Society of Civil Engineers and the Boston Branch of the American Institute of Electrical Engineers, to the presidents of the three societies, George Westinghouse, George B. Francis and L. B. Stillwell, respectively, and other guests, including John Anderson Bensel, incoming president of the American Society of Civil Engineers. The meeting will be featured by a paper on "The Main and Auxiliary Machinery of the Battleship North Dakota," built at the Fore River yard, and it is likely that some action will be taken toward securing a united engineering building for the several professional societies in and about Boston.

GIVEN A FREE SITE.

The citizens of Fort William, Ont., have ratified an agreement made with the Superior Rolling Mills Co., by which the company is given a free site of 10 acres on condition of erecting within 18 months a plant to cost $150,000 for the manufacture of wire and nails, with a capacity of 50 tons of manufactured goods per day, and to employ 100 men. The plant is also to be exempt from local taxation for 15 years. The company is in process of organization.

WILL START FIRST FURNACE IN MARCH.

The Haselton Steel Tube Co., a subsidiary of the Republic Iron & Steel Co., will start the first furnace of its new plant at Lansingville, near Youngstown, O., about the middle of March. The company expects to have all four furnaces in operation by the middle of the year. Until some stock has been accumulated, the company will not enter the market as a general seller of pipe.

MARKED IMPROVEMENT

In British Pig Iron Market—Higher Prices Imminent.

Birmingham, Eng., Dec. 29.

The marked improvement in the pig iron market continues. The improvement is the more remarkable in view of the heavy stocks, nearly 25,000 tons having been added since the beginning of the year, and 5,000 tons during the few days covering the Christmas holidays. The present total now stands at 387,623 tons. The warrant holders are evidently sanguine as to the future, as they ask considerable increases on forward accounts. The market has had to resist, also, rather less satisfactory reports from America. The shipments have been interrupted by the holidays, but now look like turning out pretty well for the month. Similarly cheerful reports come from Manchester, a market which largely serves the Sheffield district. Derbyshire foundry pig iron, in particular, is very strong. The sellers of forge iron compare rather poorly owing to the weak condition of the market, the demand for iron generally being poorer than for steel. The hematite market continues remarkably strong. For mixed numbers for prompt delivery the price is 63s 6d ($15.54), while for February and March 65s ($15.90) will have to be paid. The increase in stocks is partly due to the general stoppages of foundries during the Christmas holidays.

In the finished department, the most noteworthy improvement is in steel, and it is believed that a further rise in bars and billets will take place shortly. The rail mills are busier and steadily improving, ship building demands are increasing the output of plates. It is likely that the markets tomorrow in Birmingham will show a further improvement. Among the achievements of the last half of the year is a big output from Workington, which is the headquarters of the Cumberland rail combine. The Mossbay steel works hitherto have not surpassed 3,000 tons as their weekly output, but during the latter half of the year they established a record of 5,000 tons per week. The firm has sufficient orders to keep the works well employed for some time.

At the January meeting of the New York section of the Society of Chemical Industry, the formal award of the Perkin medal will be made to Dr. G. Acheson of Niagara Falls.

A METHOD OF SMELTING IRON ORE IN THE ELECTRIC FURNACE[1]

Description of an Electric Furnace Designed for Continuous Operation

By Edward R. Taylor.*

The applications of electricity to large problems in chemistry in the last few years have been so rapid and wonderful in their character as to awaken our keenest interest. Reactions heretofore, beyond the reach of our thought in the old methods of chemistry, are rapidly yielding to the questions we put to nature by the electric current, which obeys our bidding and goes where we send it, and keeps away from where we bar it off by our insulators and ther devices. But it is not alone the extraordinary which attracts our attention by its unexpectedness—but ordinary reactions are done in extraordinary ways and in extraordinary large units, and it is to one of the common reactions on a large scale that I desire now to call your attention.

The electric furnace for the manufacture of carbon bi-sulphide leaves nothing to be desired when applied to reactions of that kind—either in the application of the electricity or in its management. The use of broken or fragmentary carbons, feeding upon and between the main electrodes of such a furnace, fulfills so important a mission as to make what electricians are fond of calling a "fool proof" construction.

In practice we have repeatedly found it possible to shut the furnace down completely and, when perfectly cold, start it up again with ease and certainty. Fig. 1 shows the arrangement of this furnace in which at "d" are shown the main electrodes and at "l" the broken carbons falling down upon them and over their ends, the object of which is to take up current from all points of contact with the main electrodes, saving them from heavy wear, and carrying the resistance or weakest part of the electric circuit farther away from the electrodes themselves and into the center of the furnace. where the heat should be the most intense and concentrated.

Sulphur is fed around the periphery of the furnace and as it melts carries the heat absorbed into the interior.

Fig. 2 shows another form of hip. The main electrodes at "q" and "r" with the columns of broken carbons "l" falling down upon them and performing the same functions as just described with reference to the carbon bi-sulphide furnace.

I have for several years been studying the application of these general principles to the electric smelting of metals and especially of iron ores, in a construction designed for work on a larger scale. There are several important advantages in such large scale work, and the ability to concentrate

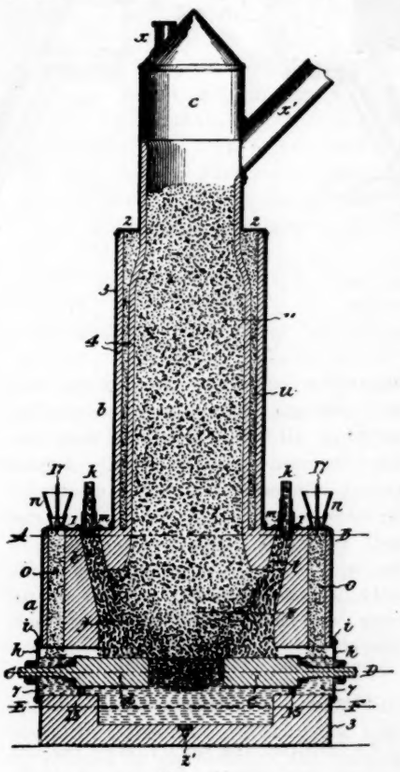


Fig. 1.

the electric heat in the center of such a furnace adds to the advantage of large-scale construction and operation.

In the case of the ordinary blast furnace for smelting iron the heat is very uniformly distributed through the furnace from the bottom upwards in such a way as to be very severe upon the lining of the furnace itself. On the other hand, in the electric furnace with the greatest heat in the center, the lining is not only immune from excessive wear—but may, by judicious management, be practically relieved of being a lining at all, becoming simply a shell to direct the course and fall of the charge itself, which, in a very important sense, becomes a movable lining of the furnace itself. This is very clearly shown in Fig. 3, where the ore mixed with fluxes and with carbon, if desired, is shown descending in the furnace upon screws near the periphery placed there in the cool part of the furnace to force the descending charge towards and into the central heat zone. The position of these screws is higher in the furnace than the electrodes and their relations are more particularly shown in Figs. 4 and 5.

In Figs. 2 and 3 is also shown, at "i," a sleeve or directive feeder through which charcoal is fed. In Fig. 2 the charcoal is shown to spread out across to join the column of broken carbons on each side—being so directed by baffle walls shown more clearly in Fig. 4.

In loading the furnace to start with the space at "q" and "3," Fig. 2, is mainly filled with charcoal with only sufficient broken carbons to insure the starting of the furnace in the cold condition, and it is designed that this column of charcoal (more easily seen in Fig. 3) shall always maintain itself between the electrodes to help maintain a high resistance in the furnace—and to keep the columns of ore in the four quarters of the furnace from joining each other and thus raising the conductivity of the furnace too high for advantageous working.

It will be noticed, Fig. 3, that coarse ore with fluxes is fed in at "j" and that fine ore with fluxes is fed in at "k" around the periphery of the furnace. Carbon can be mixed with these columns of ore if necessary—for the complete reduction of the ore. It is not designed that ore shall get down between the electrodes either for reduction or melting—but that both of these operations shall take place at a higher point in the furnace and that as fast as melted it will run down between the electrodes in drops or streams to the hearth of the furnace. The hearth of the furnace is lined with electrode material and may be

[1]Paper read before the American Institute of Chemical Engineers, Philadelphia, Dec. 8, 1909.

*Penn Yan, N. Y.

connected with an electric circuit at 10 and 27 respectively, and operated either intermittently or constantly as

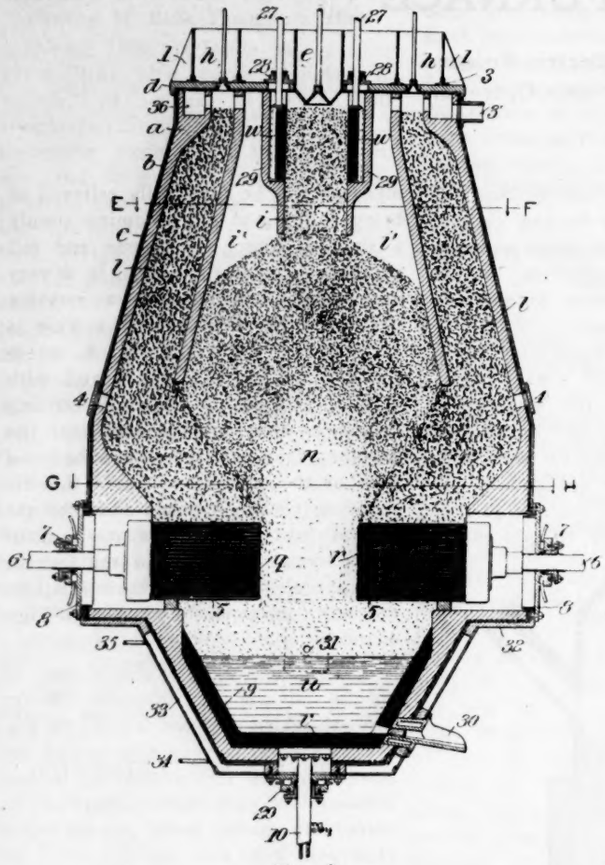


FIG. 2.

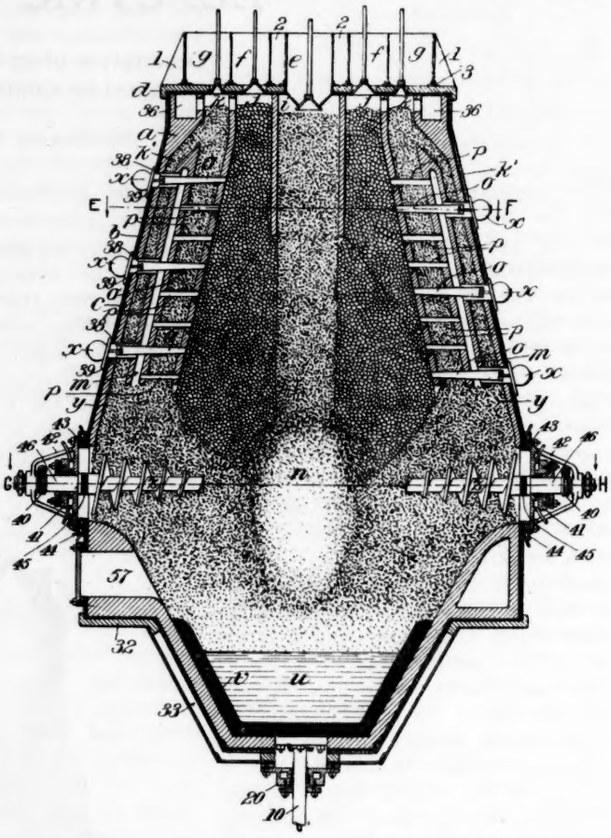


FIG. 3.

may be found desirable. Tap holes at 30 and 31 respectively are arranged for removing the slag and molten metal from time to time.

It may be interesting to note the use of expanded metal in the construction of the electrodes in Fig. 7

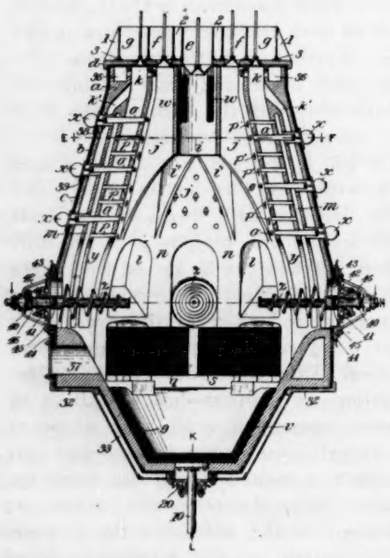


FIG. 4.

to 10, by means of which the conductivity of the metal holder of the carbons is made to extend into the electrodes and thus relieving the carbon part of them of the necessity of carrying all the electricity they deliver through the whole length of their course. In other words the electricity is taken up gradually from the metal part and the carbon does not have to do it all until near the end of its duty, a feature which all will appreciate who have used electrodes with low-voltage current.

Method of Removal of C. O.

To facilitate the reduction of the ore —there are shown in Fig. 4 baffle plates, around and past which the fine ore descends, leaving a passageway under them (being preferably triangular in shape and placed with the ridge up), through which C O from the interior hot part of the furnace may pass, and reduce portions of the ore then passing into a chamber, from which it is exhausted by little fans connected with motors "x" on the outside of the furnace, by means of which the CO_2 so produced is forced back into the central hot part of the furnace in contact with hot charcoal, which again reduces the CO_2 to C O, which process may be repeated till the gas has reached so high a point in the furnace as to become too cold to react in his way.

While the description of this may seem complicated, it will be noticed in Fig. 4 that the arches supporting these directive channels are simply and easily constructed and are so protected from the heat as to make them very enduring—the design being to so direct the several descending columns of material as to prevent either the ore or the reduced iron from making the furnace too conductive of electricity to work regularly

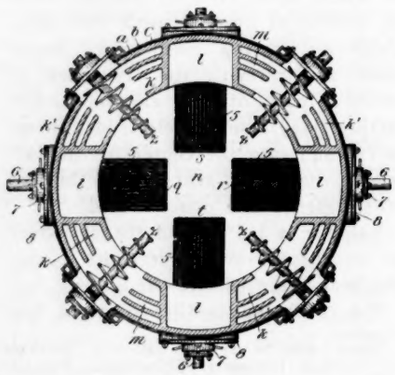


FIG. 5.

and easily, and also to compel the coolest ore to follow down the periphery of the furnace till forced into

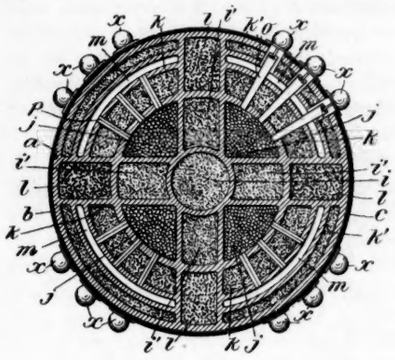


FIG. 6.

the interior either by the screws referred to or by the course of its natural descent. It is, indeed, intended that the descending ore should be, as it were, a moving lining of the furnace—constantly making its way downward and at the proper time into the central heated part of the furnace—saving absorbed heat that in ordinary furnaces would be radiated away and lost for the reaction, while when such material does reach the interior of the furnace it is at so high a temperature as to offer no chilling influence and heat is applied to the best possible advantage.

Life of Electrodes.

May we now examine a little more closely the main electrodes and their reinforcement with broken carbons. Let us bear in mind that the movement of these broken carbons as they wear away takes the place of the movement of the whole electrode in the common and ordinary use of elec-

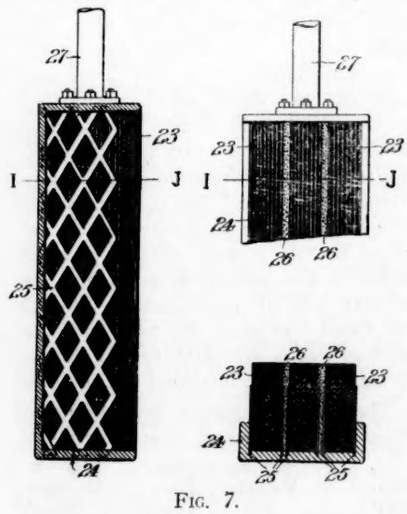


FIG. 7.

trodes, and that they are in reality a part of the electrode itself to all intents and purposes—and that the wear on the electrode proper is comparatively slight and that they do and will last during many months of consecutive use—and that the function of conveying electricity into the reaction zone is more regularly and completely done than by means of an electrode that is moved through the walls of a furnace.

We are now prepared to recognize that the ore and fluxes and carbon all have their regular descent and that the ore as soon as it reaches the temperature of reduction by CO is in an atmosphere of CO and that the complete reduction will take place before it reaches the temperature or fusion—for the space in which to move is ample and the approach so gradual that nothing precipitate takes place, and as fast as any portions reach the point of fusion and have sufficient temperature to liquify, drops of molten metal are formed and find their way quickly to the hearth of the furnace, preparatory to being tapped off, as shown at 30—either as a constant stream of metal or from time to time as may be found to be most expedient—another tap hole is provided for the slag at 31. Electrodes are provided at the top and at the bottom of the furnace which may form a circuit (preferably from another source of electricity) either with each other or with the main electrodes. In either case such a current of electricity through the charcoal column "i" "n" will have a tendency to keep said column in a state of incandescence and in a condition to reduce any CO_2 to CO that comes in contact therewith. By means of the circulatory system already referred to the reducing of ore and of CO_2 to CO should be active and often repeated in the course of the gases making their way out of the furnace.

Absence of Inert Gases.

This being a perfectly closed furnace, the gases passing out at 36 may be utilized in gas engines for heating or other useful purposes. There being no air blown in there is no inert nitrogen to be in the way of active reactions nor to carry heat away in its exit from the furnace—nor any water vapor introduced by such blast to absorb heat or interfere with the reactions within the furnace.

The coarse ore is fed in on four sides of the charcoal pyramid shown from "i" to "n", Fig. 3, and fine ore in the outer channels as shown in the same figure.

The charcoal spreads out in four ways towards broken carbon channels, as shown in Fig. 2, being kept separate from the ore by the divisional

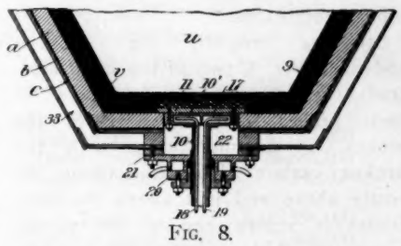


FIG. 8.

arches shown at "i" in Fig. 4, and alternately joins the columns of broken carbons descending through the arches shown very nicely at "l". The design of this arrangement is to divide the ore into four quarters or columns—shown more clearly perhaps in Fig. 6. One main object in these divisions is to interfere with any matting together of reduced iron clear across the furnace with the danger of a hold-up—or the danger of forming so good a conductor from one electrode to another as to short circuit the furnace.

I have deemed this question the hardest of solution in a stack furnace and feel satisfied that it is fully provided for.

No Lining Required.

It may be noted again that coarse ore is fed in a column separated from the fine ore that surrounds it, but more or less of the fine drops into the coarse as it descends through the openings "j" in Fig. 4, leaving behind it some cooler ore to take its place—and to descend nearer to the exterior of the furnace. The object of this surrounding mantle of fine ore is to conserve the heat seeking to escape from the sides of the furnace by radiation, it being an endeavor to make an infusible (at that temperature) arc ao perform, in this respect, the same function that sulphur performs in the carbon bi-sulphide furnace.

We should not lose sight of the fact that in reality there is no lining to this furnace in the sense that we

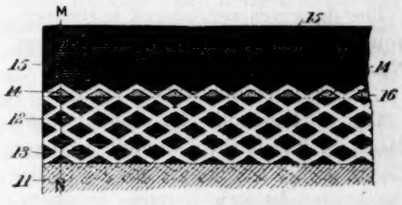


FIG. 9.

ordinarily understand a lining. The charge itself in reality becomes the lining. The shell and channels are

really directive agencies to compel the materials to go where we want them to and to be influenced by heat and the other agencies under predetermined conditions.

Studying carefully the skeleton shown in Fig. 4, two of the main electrodes are shown at "q" and "s" in their arches, and above them the arches "l" communicating with the broken carbon channels—looking directly ahead and just above the electrodes is shown one of the screws in its arch, and on either side another view of two screws—with half of the arches in which they stand and operate, and above these are clearly shown the two channels down which the fine ore descends upon them. The ore in the outer one of these will always be comparatively cool—for it has only been subject to radiant heat seeking escape—that it has absorbed.

Turning again to Fig. 3, the movement of materials can be readily

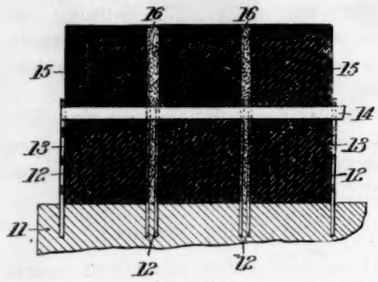


FIG. 10.

traced. The heat zone is in the center at and below "n", towards which all the charge of the furnace tends both from the top and the sides. Thus the blanket is constantly renewed from the outside and constantly descending to be tapped away in the form of molten slag or metal.

I may not detain you longer than to say that this furnace is designed to meet the demand that will soon be upon us for a really large scale furnace for the smelting of ores. For though iron ores are specially spoken of it is deemed, with slight modifications, to be well adapted to the smelting or working of many classes of material.

The drawings reproduced in the foregoing are from patent specification, No. 938,351.

The Indianapolis by-product coke plant, of which the Domhoff & Joyce Co. is selling agent, is expected to put the second battery of ovens in operation this week, when the entire capacity of the plant will be working. The product of the works is said to be sold up for some time in the future.

TWO HUNDRED YEARS OF ENGINEERING.

In his recent presidential address to the Institute of Engineers and Shipbuilders in Scotland, President Charles Pullar Hogg said in part:

The early history of engineering, in all its branches, has been traced by other hands, and in my address tonight I shall merely pass in rapid review some of the outstanding developments of the last 100 years or so, and direct your attention to some of the problems of the future. There are two great demands on the engineer of the present day; one to give cheap transport for goods, and the other, rapid transit for passengers.

It is long since the cheapest form of transport was recognized as being by water, but it was not until the latter half of the eighteenth century that there was any attempt in this country to provide canals for inland transport. After the advent of railways the use of canals decreased to some extent, and, under stress of completion, not a few of them passed under the control of railway companies.

Industrial competition with the nations of the world has forced attention to the necessity of reducing to a minimum the carriage, not only of raw materials, but of manufactured goods as well. In 1906 a Royal Commission, with Lord Shuttleworth as chairman, was appointed to inquire into the canals and inland navigations of the United Kingdom and to report on:—

1. Their present condition and financial position.
2. The causes which have operated to prevent the carrying out of improvements by private enterprise, and whether such causes are removable by legislation.
3. Facilities, improvement and extensions desirable in order to complete a system of through communication by water between centers of commercial, industrial, or agricultural importance, and between such centers and the sea.
4. The prospect of benefit to the trade of the country compatible with a reasonable return on the probable cost, and
5. The expediency of canals being made or acquired by public bodies or trusts, and the methods by which funds for the purpose could be obtained and secured; and what should be the system of control and management of such bodies or trusts.

It is an open secret that the members of the Royal Commission were much impressed by the canal system on the Continent, and I shall be surprised if their report, to be issued shortly, does not recommend great improvements in the existing canals, through routes and rates, and better communication with the leading shipping ports. We hear much of the nationalization of railways, but the nationalization of canals is a far more urgent problem awaiting solution. A Government system of canals, open to all traders on payment of fixed tolls, would, I believe, do much to revive many of our flagging industries.

Within the last 50 years several important ship canals have been constructed, among them the Suez Canal, which has revolutionized the shipping trade to the Far East; and the Manchester Ship Canal, which has converted the inland city of Manchester into a shipping port. But these are both overshadowed by the gigantic work which the United States of America have in hand in constructing a ship canal across the isthmus of Panama. The length of this canal will be 40½ miles from shore to shore, but from deep water in the Caribbean Sea to deep water in the Pacific Ocean, it will be about 50 miles long. The summit of 85 feet above sea level will be reached by a flight of three locks, in duplicate, each lock 1,000 feet long by 110 feet wide, while the minimum bottom width of the canal will be 200 feet and the minimum depth 41 feet—dimensions not much ahead of the progressive naval architect's present ideas of shipbuilding.

It is interesting to look back on the discussions which took place when the Suez Canal project was before the country 50 years ago. Some of our leading engineers declared that the canal would only be a stagnant ditch, and Lord Palmerston, speaking in the House of Commons on the scheme, said: "I am not much out of the way in stating this to be one of the bubble schemes which are often set on foot to induce English capitalists to embark their money upon enterprises which, in the end, will only leave them poorer whomever else they may make richer." As everyone knows, the Suez Canal has been a very great success, and the shares which the British government bought in 1875, at a cost of £4,080,000, are now worth fully £30,000,000 and bring in a revenue of about £1,200,000 per annum. The result may well encourage anyone to persevere who believes he has a good scheme in hand. When it was opened 40 years ago, the average size of vessel passing through the Canal was about 900 tons; now, the average size is over 3,000 tons, a striking illustration of the increased size of ships.

The following figures are of interest from several points of view:

Year.	No. of Vessels.	Net Tons.	Transit Receipts.
1870	486	436,609	£ 206,273
1880	2,026	3,057,422	£1,509,400
1890	3,389	6,890,094	£2,698,000
1900	3,441	9,738,152	£3,624,944
1907	4,267	14,728,434	£4,640,000
1908	3,795	13,633,283	£4,337,700

Engineers have achieved some notable successes in the improvement of waterways, and the case of the Clyde, so closely identified with shipbuilding and engineering, is perhaps the most remarkable of all. The history of the Clyde reads like a romance. Previous to 1825 the management of the river was under the charge of the magistrates of Glasgow—although from 1809 they acted as a Trust. In 1668, so little did it seem possible to effect an improvement on the upper reaches of the river, that the magistrates bought 13 acres of land at Newark on which to build Port Glasgow. When Smeaton was consulted in 1755, spring tides at Glasgow rose only 1 foot 9 inches, while now they rise about 12 feet. Smeaton advised that the river, for four miles below Glasgow bridge, should be canalized and a lock constructed so that vessels 70 feet long and drawing 4½ feet of water might reach Glasgow Quay! Fortunately, Smeaton's scheme, although authorized, was never carried out, and the first real improvement of the river dates from 1768, when the magistrates consulted John Golborne of Chester. Since then, improvement has followed improvement, until now, under the enlightened management of the Clyde Navigation Trust, we have a river with a depth of 32 feet at high water.

The Birth of Steam Navigation.

The Hudson-Fulton celebrations in September of this year, in the United States, have revived afresh the controversy as to the first application of the steam engine to ship propulsion. It is on record that William Symington, of Falkirk, had, in 1789, a steam engine made by the Carron company at a cost of £363 10s 10d, and that it was applied to the propulsion of a boat on the Forth and Clyde Canal. At that time, Robert Fulton, of Pennsylvania, was an artist studying in England. In 1793, Fulton gave up painting as a profession, and thereafter devoted himself to engineering. He visited Symington in 1801, and three years later he ordered an engine from Boulton & Watt, which was shipped to the United States, in 1806, and erected on board the "Clermont" in the following year. This boat, 133 feet long, was, in 1807, placed on the Hudson river service between New York and Albany, running the distance of 150 miles in 36 hours at a fare of $7, as against the running time of 9 hours at a fare of $2 in the luxurious steamers of the present day. The "Clermont" was described by the journalist of the day as "a monster moving on the waters, defying wind and tide, and breathing flames and smoke."

Symington's "Charlotte Dundas" dates from 1802, and Henry Bell's "Comet" from 1812. The "Comet," 40 feet in length, was the first passenger vessel in this country. She sailed between Glasgow and Greenock, leaving the latter town on Mondays, Wednesdays and Fridays, and returning from Glasgow on Tuesdays, Thursdays and Saturdays. The fare was four shillings for the first cabin and three shillings for the second. In a few years after the "Comet's" time, steam navigation was fairly inaugurated, and, from that time to this, improvement in the marine engine has succeeded improvement, until now the "Lusitania" and "Mauretania," each 790 feet in length and capable of steaming nearly 26 knots, cross the North Atlantic in four and one-half days. Recently passengers who lunched in New York on Wednesday, dined in London on the following Monday.

The Coming of the Turbine.

Until the advent of the Parsons' steam turbine in 1894, marine engine practice had pretty well settled down to refinements in triple-expansion and quadruple-expansion engines, but the pioneer turbine steamer "Turbinia," with her speed of 34½ knots, showed once more that there is no such thing as finality in man's work.

The steam turbine is essentially an engine for high speeds, and one of the problems of the future is, how to apply it to the 9 or 10-knot cargo boat.

To those specially interested in steam navigation, I commend the masterly treatment of the subject in Mr. Ward's presidential address two years ago.

Internal combustion engines are being largely introduced into small boats and launches, and we shall probably see great developments in these engines during this century, more especially in conjunction with those heavier-than-air flying machines, the performances of which are at present exciting so much interest, and in the hydroplane form of boat.

I have already referred to the increasing size of ships. In the case of the "Great Eastern," Brunel made the mistake of taking too big a step in advance, as many another man with big ideas has done. Since his day, the naval architect has progressed gradually, until now the available depth of water in various ports seems to be the limiting factor in design.

The Growth of Railways.

There are now said to be upwards of half a million miles of railways in the world—a length sufficient to put a girdle 20 times round the planet on which we live. All these have been built within the last 100 years, and the greater portion within the last 50 years.

To appreciate fully what these half million miles of railways mean in the industrial development of the world, let me give you a few statistics from the Board of Trade Report on Railways in the United Kingdom, for the year 1908. The paid up capital of the railway companies, excluding nominal additions due to consolidations and conversions, is 1,114 million pounds. The total length of the railways is 23,205 miles, of which 12,926 miles are double line or more.

The receipts and net earnings are as set out in the following table:

Receipts:—	
Passenger traffic....	£ 51,664,000
Goods traffic.....	58,888,000
Miscellaneous	9,342,000
Total	£119,894,000
Working expenditure..	76,408,000
Net earnings.....	£ 43,486,000

The net earnings average a modest dividend of about 3 1/3 per cent on the total paid up capital.

The supersession of that very efficient machine, the steam locomotive, is still a long way off. Electric traction has practically captured the whole of the tramway traffic, for which it is admirably adapted, but its adoption on railways has been very slow. There are, however, in the United Kingdom, 200 miles (single track) of railways partly worked by electric traction, and 204 miles (single track) solely worked by electric traction—the latter chiefly on the tube railways of London.

Electric Traction.

The multiple-unit system is the favorite method of application, but I find from recent Board of Trade returns that there are 88 electric locomotives in the country, 52 of which are on the City and South London railway, the pioneer railway of its kind in London and in the world, so far as I know.

Electric traction on railways is making much greater progress abroad, where, partly owing to hydro-electric installations and partly owing to fewer legal restrictions on high-voltage lines, it operates under more favorable conditions.

The first street tramway in this country was laid down in 1860 by George Francis Train, at Birkenhead. The step rail, the form of rail first adopted, was much against the development of tramways, and practically the whole system has been constructed within the last 30 or 40 years. In the United Kingdom, in 1879, during the time when horse traction was chiefly employed, there were only 321 miles of tramways; in 1898, when the use of steam power on tramways was at its maximum, there were 1,064 miles; and in 1908, when steam had given place to electricity, there were 2,464 miles of tramways in operation. In many urban and suburban districts, tramways, with their gross receipts of £12,400,000 per annum, have cut deeply into the railway passenger traffic receipts.

The following table shows how, in this country, electric traction on tramways

has nearly ousted all other forms of traction at the present time:

Electric traction	2,286 miles.
Steam traction	52 miles.
Cable traction	28 miles.
Gas motor	4 miles.
Horse	94 miles.
Total length of tramways...	2,464 miles.

Tramway permanent way construction has passed through various stages until it has now practically settled down to a rail weighing 106 pounds per lineal yard, supported on timber cross sleepers embedded in cement concrete.

Many different opinions have been expressed as to the cause of the corrugations which sometimes appear on the top of tramway rails, more especially when the line is on a comparatively flat curve. As the car passes over the corrugations, there is considerable noise and vibration, shaking loose the causeway setts adjoining. How to avoid making these corrugations appears to be an unsolved problem, the importance of which may be gaged by the fact that these corrugations cost the corporations and tramway companies of this country alone many thousands of pounds per annum in extra maintenance. The cost of maintenance, however, has been somewhat reduced by grinding out the corrugations with carborundum, but the problem still remains.

Hydro-Electric Plants Increasing.

During the last 30 years progress in electrical work has probably been greater than in any other branch of engineering. Central power stations and hydro-electric installations have brought down the cost per Board of Trade unit, and improvements in long distance transmission have contributed to the successful development of many industries. Electric motor driving for engineering workshops has many advantages, and it is being applied even to steel rolling mills. The electric furnace, too, is coming to the help of the metallurgist, and quite recently a hydro-electric power plant has been constructed to manufacture nitrates from atmospheric nitrogen. In this country we mine about 270,000,000 tons of coal per annum, of which 63,000,000 tons are exported to other countries, and in addition 3,000,000 tons are exported in the form of coke and patent fuel, while nearly 19,000,000 tons are taken as bunker coal by steamers engaged in foreign trade. In view of the probable exhaustion of coal in the coming centuries, if not in the near future, it behooves engineers to make the most of hydro-electric installations and other methods of obtaining energy. In matters of this kind, the physicist is the true pioneer, and the engineer a humble follower. Engineers have, therefore, viewed the establishment of the National Physical Laboratory with the utmost favor, and it is hoped that the researches there will in good time fulfill the expectations of its founders.

In all branches of engineering work there has been continuous progress in methods of construction. Design and construction, like theory and practice, act and react on each other. Bridge foundations are no longer built on piles within coffer-dams. The steel cylinder or caisson, as the case may be, and the air compressor, have changed all that, and rendered the carrying down of foundations to the solid rock, at any depth within 100 feet, a comparatively simple matter. In the same way, concrete monoliths are sunk to form foundations for dock and quay walls, far below the influences of scour and dredging.

Iron and Steel Bridges.

Iron and steel bridge design has passed through a great development since the first iron bridge was erected in 1777, over the Severn, at Coalbrookdale. The Britannia Tubular Bridge, opened in 1850, and still in use, marked an era in bridge construction. Lattice girders and various forms of trusses followed, culminating in the construction of the great cantilever bridge over the Forth, with the erection of which Sir William Arrol, one of our past-presidents, was so honorably identified. It is interesting to observe in passing that, when it was proposed to erect a suspension bridge across the Forth, a paper was read before this Institution strongly advocating a cantilever bridge instead of a suspension one. In the case of large spans for railway or other heavy traffic, the cantilever type of bridge has no rival.

One of the greatest advances in methods of construction has been tunneling by the use of a shield. Brunel used a form of shield in the construction of the Thames Tunnel, but we are indebted to the late James Henry Greathead for the modern shield, which was first used in the construction of the City and South London railway. Altogether there have been constructed in recent years about 82 miles (single line) of these tube railways in London. Operated by electricity and with automatic signaling, it has been found possible at the busiest times of the day to run forty trains per hour—that is, a train every minute and a half—a flow of traffic until recently considered quite outside the bounds of practical working.

Widespread Use of Steel.

The usual method of tunneling with the shield is to excavate at the face and to insert and bolt up the cast iron segments as the shield is pushed forward by hydraulic rams. In the case of some of the tunnels recently completed at New York, under the Hudson, the mud and silt of the river bed were so soft that the contractors closed up the front of the shield and pushed it ahead, simply displacing the mud. In this way what was at one time considered the most difficult part of the work, actually became the easiest.

It has been truly said that we are living in the "steel age." In almost every respect, steel is superior to wrought iron, which it has gradually displaced for many purposes, but it is somewhat more liable to corrosion. Metallurgists can produce a rustless steel—nickel steel—which has greater elasticity and tensile strength than ordinary mild steel, but the price per ton is still prohibitive for all but the highest class of work. How to make a rustless steel at a moderate price is one of the problems of the future.

Among the recent developments in the use of steel is steel frame construction, which is being so largely adopted in the erection of high buildings, and which gave a good account of itself in the San Francisco earthquake of 1906. In New York steel frame buildings are carried to an enormous height. The tower of the Singer building is 612 feet high, while that of the Metropolitan Life building is nearly 700 feet high, and contains offices to a height of 526 feet above the street.

Reinforced Concrete.

Of all the changes in methods of construction within the province of the civil engineer in recent years, probably none has been more prominently advocated than the use of reinforced concrete, that is, Portland cement concrete strengthened by steel bars, rods, or wires embedded in it. Various systems of reinforcement are in use, and much ingenuity has been expended on designs for structures of every kind, even for water pipes under pressure, in place of cast iron pipes. It is specially well suited for wharves and buildings of the warehouse class, and it has been adopted for bridges under favorable conditions, but, unfortunately, there is a disposition to advocate its use under all conceivable circumstances, which in the end can only retard its more general adoption. It demands more than ordinary care in its construction, because any exposure of the steel reinforcement must inevitably lead to corrosion and ultimate loss of strength.

Looking back on the achievements in engineering and shipbuilding within the last 100 years, one is tempted to ask whether the progress within this century will be as great and continuous as it has been in the past. Is 2009 to mark as great an advance upon 1909 as does 1909 upon 1809? I almost feel that we must own that the probabilities are against another such era as that century of marvel, the nineteenth. An honest appreciation of the facts compels the view that the

curve of progress is no longer the soaring graph of some decades back. Science still advances, but there are fewer worlds to conquer. The engineer of today is probably more imbued with the spirit that makes for advance than have been any of his predecessors, but they had the inestimable advantage of finding themselves practically upon virgin soil. The sphere of the engineer of today is largely to expand ideas already formulated and to improve existing types. The nineteenth century demonstrated how to utilize the great forces of nature. The problem of the twentieth will be largely how to do so efficiently. Now, there is a definite limit to efficiency—100 per cent—and it is only in the initial stages of development that the brilliant advances of last century are possible. Again, the final stages of advance, infinitely more difficult of accomplishment, do not bulk so largely in the pages of engineering history. Take the case of telegraphy. Marvels of scientific development in this branch of engineering will no doubt be achieved in days to come, but can any conceivable advance compare with the stride constituted by the essential invention itself? Even the introduction of wireless telegraphy, marvelous as it is, to the lay mind, almost to the point of the supernatural, and useful as it has proved itself, seems but a trifling refinement when one thinks of the revolution in life and thought wrought by the first fruits of the parent idea.

Possibilities of the Future.

In all this there is intended no suggestion of laying down our arms. There are still scientific worlds to subdue, and I have only endeavored to indicate that those left to us are, in the inevitable nature of things, difficult of conquest and capable only of being subdued by degrees. Aviation, the storage of electricity, the utilization of the solar rays for power, the fixation of nitrogen, all these suggest lines of possible achievement, and indeed no aspirant need be without a fruitful field to work in. But today's work is necessarily of the nature of intensive culture, as compared with yesterday's tiling of the virgin soil.

In all that makes for advance, I believe that our Institution will, in the future, as it has done in the past, bear a worthy part.

Ocean rates continue high on iron ore, recent charters from Spanish ports being on a basis of 9 shillings 6 pence. Two or three steamers have been arranged from Grecian ports and will bring over ores containing a limited amount of chromium, with which two or three eastern furnaces will experiment, using a limited proportion in their mixture. Receipts of Spanish and Swedish ore are heavy.

COAL LEVELING MACHINE FOR BEE-HIVE OVENS.

What is said to have proven to have been one of the most successful devices for assisting in the economical production of coke, is a new machine for leveling coal in bee-hive ovens.

One of these mechanical levelers has been in operation at the Continental No. 1 plant of the H. C. Frick Coke Co., Uniontown, Pa., for the past six months and has attracted much attention; in fact it bids fair to equal in popularity the coke drawing machine. We are able to give a brief outline of what this machine is accomplishing, both in labor and coal saving, which will doubtless appeal to all those whose interest lies along the line of coke production.

The machine at Continental No. 1 levels 185 ovens per day, finishing its task within one minute after the last oven is charged. The machine is operated by one man and the labor-saving alone amounts to about $14.50 per day. In addition to the saving of labor, the work done by the machine makes it possible to not only burn off the usual charge put in an oven, but also allows the charging of approximately 7 per cent more of coal, thereby increasing the output of the plant, besides making into coke the coal which has heretofore been carted to the ash dump, due to the charge not burning off by reason of imperfect hand-leveling. It is said that if the amount of coal carted to the ash dumps daily throughout the coke regions were known it would startle those who are putting forth every effort to conserve our resources in this valuable commodity.

The proper leveling of the machine is not the only thing which makes it possible to burn more coal than is customary where hand-leveling is practiced. Where the machine is used, as soon as an oven is drawn the door is immediately bricked up and daubed, before the oven is re-charged, thus conserving so much heat that the new charge will ignite within one-third the time required where leveling is done by hand. This gives the coal longer to burn and has quite a little to do towards increasing the yield.

The machine runs on the larry track, uses the larry trolley, and operates through the trunnel head, and therefore calls for no expense for installation. As shown by Fig. 1, the machine consists of a wheeled truck carrying a swinging frame, at one end of which is a vertical, sliding leveling shaft, which drops down through the trunnel head, and can be raised up clear of the track when desired. The truck is driven by a 20-horsepower standard railway type motor, geared to one of the axles. A similar motor, mounted on the swinging frame, drives and raises and lowers the leveling shaft. The handling gear, consisting of controllers, a hand-wheel and two levers, are under easy and complete control of the operator. The main vertical shaft is carried in a sliding cross-head guided by vertical ways and is raised or lowered by means of two wire cables wound on drums mounted on a shaft driven by friction gearing and is partially counterbalanced. By means of hand lever, the friction gearing can be thrown in, raising the leveling shaft, or by dropping the

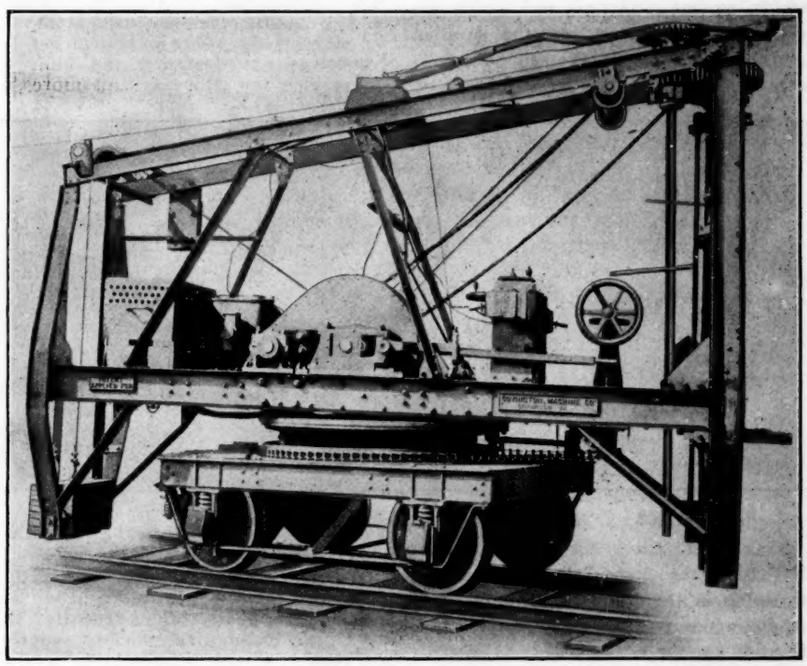


FIG. 1—COVINGTON MACHINE CO.'S COAL LEVELER.

lever a brake comes into action, holding the shaft at any desired height.

The leveling shaft, which drops through the trunnel head, is provided at its lower end with a pair of pantographic arms, which close up within the head when going into or coming out of the oven, and are opened out to their full extent when leveling. The action of these arms is shown by the accompanying cuts: Fig. 2, showing the arms fully extended, and Fig. 3 closed.

In leveling, the operator moves his machine near the center of the oven, adjusts it to the center of the trunnel head by the hand wheel, and then by shifting the hand lever referred to, allows the shaft to drop into the oven, and by means of the controller starts it revolving. A friction device operates an internal nut, which, moving a plunger rod within the vertical shaft, opens out the leveling arms, and by the time the arms are fully extended the oven is perfectly leveled.

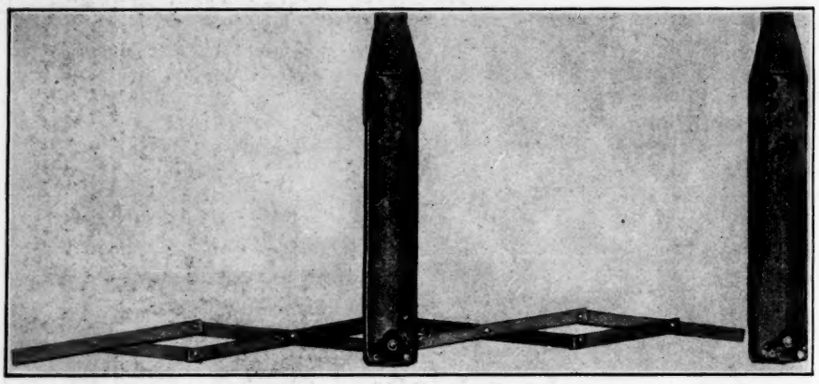


FIG. 2—PANTOGRAPH ARMS EXTENDED. FIG. 3—CLOSED.

Reversing the motor closes the arms; throwing in the friction raises the shaft to its upper position, and the machine is ready for the next oven.

The machine can be built to level any size oven, and will operate equally well on a double single block of ovens. It is as mobile as a larry, and is never in the way of chargers.

The machine is being placed on the market by the Covington Machine Co., Covington, Va., who will be remembered in connection with the introduction of the coke drawing machine now so widely used throughout the coke regions.

TRADE CONDITIONS IN EUROPE MAKE AMERICAN COMPETITION DIFFICULT.

The reports of Special Consular Agent Carden on conditions and methods in European plants are full of interest to American manufacturers. Writing of a visit to the State Locomotive Works in Budapest, Hungary, he says:

The Budapest Locomotive Works are turning out several types of locomotives more nearly approaching American standards than will probably be found in any other European shops. The writer bases this statement on personal inspections of leading locomotive establishments in Germany, Switzerland, Belgium, France, and Austria. It may be said further that the Prairie and Atlantic types of locomotives, which the Hungarian State Railway shops are now turning out in Budapest, are unexcelled on the Continent. These Prairie and Atlantic types are complete American locomotives. Imagine one of the most modern of the big prairie class of locomotives of the Chicago-Denver lines, equipped with copper fire boxes and copper stay-bolted throughout, with a valve gear of the highest efficiency, with a machining on all engine parts fit for exposition display, and one has a picture of the new Hungarian locomotive. There is still another feature which should be mentioned: These Hungarian locomotives are designed and built to do service for 20 years and more.

There is undoubtedly a strong American sentiment among the Budapest engineers, and recently the Budapest locomotive officials suggested that it might be advisable to follow the American practice and substitute steel fire boxes for the very expensive copper equipment. It is said that the question was not discussed officially, but was more in the nature of a suggestion in case copper prices should advance materially.

Attention has been repeatedly called to the exacting attention to detail and high finish demanded in the European trade. European locomotive builders have repeatedly stated that they wished it were possible to escape from many of the seemingly unnecessary conditions imposed upon them by designs and specifications. It should be understood, however, that many of these designs emanate from government sources, and throughout Europe in general a very large part of the locomotive building is for government-owned railways. The standard set by these government requirements has a marked influence on locomotive building, even to private orders. The pace has apparently been set in Europe which admits of competition only on the part of engines of the highest design and finish. Here is one of the principal reasons why American-built locomotives are practically excluded from the European field. This does not imply that our own locomotive shops cannot meet European requirements. The distinction is one of conditions attending the building of locomotives. The requirements in Europe and the United States are not the same.

Of the Ringhoffer works at Prague, building cars and railroad equipment, he says:

A working day at the Ringhoffer works involves nine hours, less two pauses of one-half hour each. This makes the actual working time eight hours, although the men are present at the shops for nine hours. The best workmen receive from 6 to 7 crowns ($1.22 to $1.42) per day, and laborers 3 to 4 crowns (61 to 81 cents) per day. In the hammer shop foremen receive 8 to 10 crowns ($1.62 to $2.03) per day, and the same statement applies to foremen in other departments. A workman who has been in the employ of the company for t n years receives a certificate to that effect and can not be discharged. In the event of slack conditions arising, the situation is met by first reducing the number of hours of work, followed, if need be, by the discharge of short-time men. There have been, it is stated, practically no strikes at the Ringhoffer works, and it seems to be well recognized that the management of this fine plant has always endeavored to do the utmost for the welfare of its employees. Instances of welfare work at Ringhoffer's embrace a sick fund, a superannuation fund for the official help, an old-age pension for workmen, and a loan society.

The statement was submitted to the Ringhoffer management that it is the practice in many American machine-tool establishments and other works to keep a record of the production per man per year, basing the same on a record of all material produced within a given 12 months, taking the value at the net price received by the manufacturer and dividing this sum by the total working force, exclusive of the office help. The management was requested to give a similar computation regarding shop efficiency at Ringhoffer's; in other words, the quotient which represents the production per man for one year. The figure supplied was 1,784 crowns ($362).

The per capita output quoted in the foregoing is so low as to raise the presumption of error, since, if allowance is made for a profit, operation and for the value of material, the average wage per man becomes almost infinitesimal judged by American standards and illustrates the hopeless nature of efforts at competition.

The Silver Creek Furnace Co. is repairing its Rome, Ga., stack and expects to relight it Feb. 1.

THE ROE BLAST FURNACE STOCK DISTRIBUTOR.

By B. G. Klugh.

In blast furnace operations it is universally agreed that no factor is of greater importance than the distribution of the stock in charging. However desirable the stock in physical and chemical characteristics, or however perfect the design and equipment, the operations will be hopelessly handicapped, if the proper relation of coarse and fine scrap is not observed in charging. In all skip filled furnaces, where the stock is dumped into the hopper it enters by sliding off an inclined plane, in which case the lump will attain a higher velocity than the fine, and so be arranged in a vertical section on one side of the hopper, as well as inside the furnace.

In hand-filled furnaces the problem is thought to be largely solved by placing each succeeding charge one point further around the periphery of the hopper than the preceding charge, thus arranging each kind of stock in parallel spirals, provided the top fillers carry out orders. Several large furnaces have clung to the more expensive method of filling, fearing the poor distribution usually incident to mechanical charging.

A number of very ingenious appliances have been designed to correct this very obvious fault in mechanical charging. All of these depend upon a number of mechanical appliances on top of the furnace, as well as a degree of personal attention; thus depending upon two factors, neither of which is absolutely reliable. All experienced furnacemen agree that the fewer working parts on top of the furnace, the better, and that the elimination of the personal equation is a very desirable proposition.

With the above undesirable features in mind, the distributing device herein described was designed and patented by J. M. Roe, Toledo, O. The cuts show it to be simple in the extreme. To render the explanation of its operation plainer, suppose the skip discharge lines to lie north and south. Now, as the north skip discharges, the entire skip load is cut in two equal parts, in a vertical plane, by the apex of the chutes *J*. The portion to the north is deflected to the side of the hopper and enters the hopper as though no distributor were present. The portion of this skip load to the south is deflected by the inclined plane of the chute bottom *H*, and enters the hopper, cutting the north portion at right angles. The load from the south skip is cut in the same way as that from the north skip, except that the directions of the streams of ore are reversed, and in this way every two consecutive skip loads charged are distributed to four points in the hopper. This is done every time in exactly the same way, without any dependence whatever upon either men or machinery. Furthermore, in this device, since the coke is discharged directly on the chutes, the usual fall to the hopper which generally breaks up the coke, is avoided. Practically all other devices have aggravated rather than avoided this undesirable feature of breaking up coke. There being no work parts, there is nothing to clog up or interfere in any way with the operation, and no attention whatever is necessary, as, when constructed of heavy plate, the appliance will outlast any ordinary furnace lining.

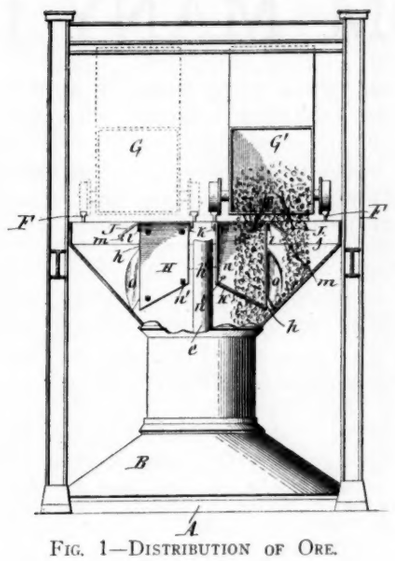


Fig. 1—Distribution of Ore.

This distributor was put into use on Furnace B of the Toledo Furnace Co. after about four months of its second blast, thus giving an excellent opportunity of showing the comparative workings of the furnace with and without the distributor.

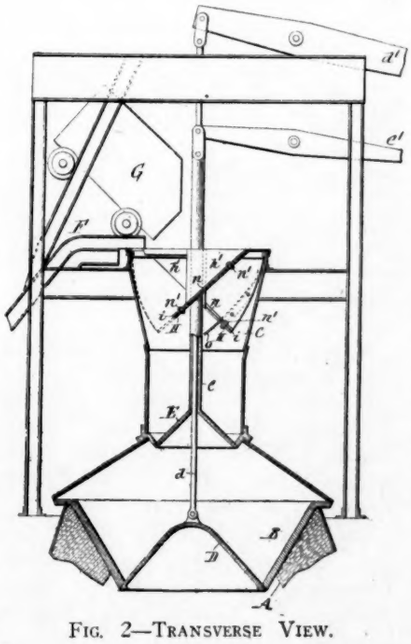


Fig. 2—Transverse View.

Prior to its installation the stock was tested by hand at four points several times daily. The average variation of the top of the stock was 5 feet, the maximum 9 feet, and the minimum 1 foot. After the installation of this distributor the hand testing was continued, and the variation at four points was found never to exceed 2 feet, with an average variation of 1 foot. At this time the furnace was being run on a patched lining, and after about eight months' operation, the furnace developed a "hot spot," but before two days had elapsed this "hot spot" extended at a uniform height entirely around the furnace. No more obvious testimonial of uniform stock distribution could be possible. The furnace was run both before and after the installation, alternately on basic, malleable and foundry irons, using different classes of stock in every case. Forty-eight hours after this top was put on, the tuyeres showed a more uniform heat than had ever been noted on this furnace.

Regarding this distributor, the management, while declining to give any figures for publication, made the general statement that the saving in fuel, the uniformity of product and the increase in production more than paid for the entire cost of installation the first month it was installed.

THE POISONOUS PROPERTIES OF ILLUMINATING GAS.

The poisonous properties of coal-gas are generally attributed to its content of carbonic oxide, especially as no other substance of known poisonous properties has been found in it, and patients suffering from coal-gas poisoning show the symptoms associated with the inhalation of carbonic oxide, including the peculiar bright red color of the blood. From experiments made by Dr. von Vahlen, at Halle, it seems probable that we must revise this view, for on making experiments with frogs, animals particularly resistant to carbonic oxide, it was found that they were poisoned far more rapidly by coal-gas than by the corresponding amount of the oxide. Other experiments with dogs showed that the poisonous effect of coal-gas was twice or three times as great as that of the carbonic oxide it contained. Evidently there is some other constituent of coal-gas which is poisonous, though what it is cannot yet be stated. Merely removing the carbonic oxide from coal-gas will not suffice to render it non-poisonous.—*The Ironmonger.*

The Wisconsin Steel Co. lighted its No. 1 stack at South Chicago, Dec. 11.

NEWS FROM MANY INDUSTRIES

(In order to assist the post offices in delivering letters to new concerns, it is suggested that the names of incorporators be written in the lower left hand part of every envelope addressed to such new companies.)

New Buyers:—

The following manufacturing companies have filed articles of incorporation:

Aluminum Specialty Co., Manitowoc, Wis.; $25,000; J. C. Watts, G. L. Born and E. W. King.

American Foundry Co., Tulsa, Okla.; $10,000; by W. A. Robine, Leonard Fingul and B. S. Thompson.

The Union Saw Co., Camden, N. J.; $250,000; by F. R. Hansell, George H. B. Martin and John A. MacPeak.

The Federal Bolt Co., Boston; $75,000; president, W. F. Mackerman, and treasurer, C. P. Connors, Boston, Mass.

The Piper Machine Co., Indianapolis; $10,000; automobile parts; by J. C. Piper, J. W. Selvage and L. C. Walker.

The X. L. Machine Co., Cleveland; $10,000; E. J. Foster, M. J. Raus, H. E. Foster, E. J. Mottes and K. E. Adams.

The Northwestern Engineering & Construction Co., Milwaukee, Wis.; $100,000; W. E. Elliott, H. J. Dunker and George H. Schermuly.

The Gardiner Metal Co., Chicago; $50,000; James Gardiner, William L. Gardiner and Harry L. Gardiner, all of Chicago, Ill.

Comstock-Wellman Bronze Co., Cleveland; $25,000; by C. W. Comstock, S. T. Wellman, F. S. Wellman, Julia A. Wellman and L. W. Comstock.

The Rockford Punch & Mfg. Co., Rockford, Ill.; $15,000; by C. G. Ballentine, W. F. Dewey, L. M. Ballentine and Clara F. Dewey.

The Ornamental Iron & Bronze Co., Cleveland; $15,000; by Arthur J. Hollingshead, George J. Paul, Edward W. Paul and Charles L. Paul.

The Miami Boiler Compound Co., Cincinnati; $10,000; William H. James, Ben Tebbe, Charles Breckley, Harry Holthoff and P. J. Mark.

The Speer Automobile Gas Machine Co., Rockford, Ill.; $15,000; Howard W. Hall, George H. Cormack, David L. Hughes and Hiram Phetteplace.

The Direct Valve Mfg. Co., Indianapolis, Ind.; $50,000; auto parts; directors, M. M. Parkinson, W. H. Parkinson, A. A. Downey, B. F. Meixwell and E. O. Call.

L. H. Braun Mfg. Co., Carlinville, Ill.; machinery, tools and implements; $25,000; by L. H. Brown, J. R. Neilson and Thomas Rinaker, Carlinville, Ill.

The Smith & Travers Diamond Drill Co., Ltd., Sudbury, Ont., capital $100,000; provisional directors, Thos. E. Smith, Thomas Travers, John H. Clary and others.

The Chicago Central Mfg. Co., Chicago; $20,000; manufacture and deal in valves and metallic appliances; John S. Hummer, Charles A. McDonald and J. Paul Dunne.

The Hubbard Steel Foundry Co., Chicago; $250,000; manufacturing iron and dealing in iron and steel products; J. P. Grier, W. H. Tuttle and N. D. Cross.

The Indiana Specialty Works, New Albany Ind.; $10,000 capital stock; to manufacture automobile parts. By August Kahler, Anton Kahler and Margaret H. Kahler.

American Road Machine Co., of Canada, Ltd., Goderich, Ont., capital $100,000; provisional directors Frederick W. Woods, Geo. F. Blair, Robert E. Harp, C. A. Navin and Herbert E. Hodgens.

The Virginia Electric & Machine Works, Charleston, W. Va.; $50,000; by Edwin M. Keatley, James F. Schwalm, A. W. Fitzwater, W. C. Summers and George E. Carver, all of Charleston.

Spence, Smith & Kootz Co., Parkersburg, W. Va.; general machine shops; $50,000; by H. M. Spence, W. S. Smith, Albert Kootz, W. C. Baker and D. C. Kasto, Parkersburg, W. Va.

The Rochester Drop Forge Co., Rochester, N. Y.; $40,000; dies, plates, etc.; Louis M. Beattle, L. W. Hostettler and Frederick K. Thompson, Rochester, N. Y.

The Tiffany Kehoe Mfg. Co., Syracuse, N. Y.; machinery, tools, etc.; $5,000; by Homer A. Tiffany, 402 South Geddes street, Thomas P. Kehoe, 400 University block, Austin M. Burton, 221 Fitch street, all of Syracuse, N. Y.

Arthur J. Rieser & Co., New York City; machine shop, foundry and factory supplies, etc.; $20,000; by Arthur J. Rieser, 515 West 143d street; Arthur B. Cohn, 668 Riverside drive; Adolph Cohn, 150 East Ninety-first street, all of New York City.

The Modern Malleable Range Co., Ltd., Chatham, Ont.; capital $40,000. Provisional directors: Robert Gray, William R. Landon and Manson Campbell.

The Berlin Fuel Savers, Ltd., Berlin, Ont.; capital, $40,000; to manufacture fuel savers, radiators, etc.; provisional directors, Solomon A. Brubacher, Alfred C. Bender, J. A. Good, Geo. McAllister, Irvin W. Kuchnor and Henry Dumart.

R. Bigley Mfg. Co., Ltd., Toronto, capital $100,000; to carry on a general foundry and machine shop business, etc.; provisional directors, Arthur E. Randall, Gustavus M. Mulholland, Archibald Todd, Richard Bigley and J. H. Young.

New Construction:—

The Davenport Locomotive Works, Davenport, Ia., it is understood, will expend $250,000 in additional plant construction.

The Keeler Brass Co., Grand Rapids, has taken out a building permit to construct a brick foundry at an estimated cost of $1,500.

The T. L. Smith Co., Milwaukee, has let contracts for the erection of a large machine shop at Thirty-second and Hadley streets, estimated to cost $100,000.

The Flour City Ornamental Iron Works, 620 Twenty-eighth avenue, South Minneapolis, has taken out a permit to build a one-story brick addition to cost $8,800.

The Reliance Boiler Works, of Milwaukee, is erecting a new plant, consisting of factory and office buildings, costing $20,000, at Thirty-second and Hadley streets, Milwaukee.

R. N. Bassett Co., Shelton, Conn., manufacturer of brass goods, has announced plans for an addition to its plant, the new foundry to be four stories, of brick, 60 x 100 feet.

The Aluminum Castings Co. has nearly completed its factory buildings at Newton and Jos. Campau streets, Detroit. The site on which the plant is being built embraces 24 acres.

The Porcelain Enameling Association of America, Sheboygan, Wis., has started construction work on additions that will more than double the present capacity. The foundry will be considerably enlarged.

The Racine Aluminum & Brass Foundry, Racine, Wis., whose former quarters were inadequate to supply the rapidly increasing demand for its product, has just moved into a new building, 40 x 100 feet, which has been modernly equipped.

The Springfield Crude Oil Engine Co., Springfield, Mass., began construction of its first building, one story, 75 x 100 feet. The ultimate

plans include 10 large buildings and a central power house.

The Southern Pipe & Foundry Co., South Knoxville, Tenn., advises that it has plans prepared for doubling its present building, which is now 250 x 400 feet. The new equipment is all being made in Knoxville.

The Carbondale Machine Co., Simpson, Pa., has begun he construction of an addition to its plant, which will be used for a blacksmith and test shop. The building will be of steel and concrete, 35 x 100 feet.

The American Rolling Mill Co. has just installed four new annealing furnaces at its Zanesville, O., plant. It is understood that further additions will be made to this plant in the next few months.

The Standard Steel Works has let contracts for the construction of a steel foundry at its Burnham, Pa., plant, 70 x 184 feet, of concrete and structural steel construction, which will double the plant's capacity.

Plans have been drawn for an addition to the plant of the Laidlaw-Dunn-Gordon Co., Elmwood place, near Cincinnati, for a 200-foot extension to the machine shop and an extension of equal length to the foundry.

The Wilcox Engine Co., Saginaw, Mich., is erecting a new plant on Holland avenue which will double the capacity of the old plant. The company manufactures automobile parts, salt works machinery and copper sheet metal products.

The Worcester Pressed Steel Co., Worcester, Mass., will shortly let a contract for an addition to its plant 90 x 110, of wood and steel, two stories, estimated to cost about $12,000. The company is also preparing to build a power house 25 x 30 feet.

The Rock Island Stove Co., Rock Island, Ill., has let a contract for the construction of a six-story brick warehouse adjoining the company's plant. The building will be 55 x 100 feet, and will be provided with elevators. The building is estimated to cost $75,000.

The Hollenbeck Mfg. Co., Holdrege, Neb., is installing new machinery in its old shops because of the desire to avoid delay in getting out the product for the spring trade, instead of attempting to move into the new building at this time.

The Buick Automobile Co.'s new sheet metal factory at Flint is fast approaching completion, and will be ready for occupancy in the spring. The building is 150 x 800 feet, making it as large an exclusively sheet metal working plant as any in the country.

The new plant of the Vesper Safety Clevis & Malleable Iron Works, at Vesper, Wis., will soon be ready for operating. The foundry is 60 x 100 feet, and the finishing room 60 x 100, both built of brick. The plant will be operated by electricity.

The Stickney Engine Co., St. Paul, has made a proposition to establish a gasoline engine shop at Niagara Falls, Ont., provided the city will loan the company $27,500 at 6 per cent, which is half the estimated cost of the proposed building site. The ratepayers will vote on the proposed by-law Jan. 12.

The Veitch-Matthews Engine Co. will commence the construction of a plant at Bessemer, Ala., about Jan. 1. G. B. Crowe, of the Yolande Coal & Coke Co., is president of the Veitch-Matthews company, which concern proposes to manufacture gasoline engines under a patent recently issued.

The Manitowoc Brass & Foundry Co., Manitowoc, Wis., has completed the improvements and installed machinery in its plant, and has begun the manufacture of brass and aluminum goods. Those interested in the new company include Abraham Schwartz, David Dalkensky and Henry Stahl.

The Hastings Foundry & Iron Works, Hastings, Neb., began work the first of the year constructing a new plant south of the Burlington passenger station. The new plant will be one of the best equipped in the west and will afford enlarged facilities for handling the company's business.

General Industrial:—

The Baldwin Locomotive Works has filed notice of an increase in capital stock from $10,000,000 to $20,000,000.

Creditors of the South Baltimore Steel Car & Foundry Co., Baltimore, Md., have just been paid a cash dividend of 40 per cent. The amount involved in the disbursement was $499,200.

The Indiana Steel Co., Gary, Ind., has filed notice of an increase in its capital stock to $20,000,000, the fee for registering with the state officials being $19,928.20.

Mullen Wayne has been appointed receiver of the Prizer-Painter Stove & Heater Co., Reading, Pa., whose plant was seriously damaged by fire several months ago.

A successor to the late Morris Bachman, president of the Sharon Steel Hoop Co., Sharon, Pa., will be chosen at the annual meeting of the company to be held in February.

The Commercial Iron Works Co., Penn Yan, N Y., has repaired its foundry and is again operating it. The patterns were not destroyed by the recent fire, which badly damaged its machine shop.

Articles of incorporation have been filed by the Winneconne Heat, Light & Power Co., with headquarters at Winneconne, Wis. The incorporators are Martin, Mathias and Grace E. Matheson.

The McIntyre Iron Co., Albany, which recently increased its capital stock from $160,000 to $200,000, is interested in the Newcomb iron mines in the Adirondacks, which Wallace T. Foote, of Port Henry, has been instrumental in developing.

The Garry Iron & Steel Co., which is planning to remove to Youngstown, O., has sold its building on Lakeside avenue, Cleveland, to the Tuteur Realty Co., which controls the Duplex Hanger Co and the Republic Structural Iron Works.

The following residents of Cedar Rapids, Ia., have incorporated the Universal Crusher Co., of Cedar Rapids, Ia., with a capital of $50 000, to manufacture stone crushers and machines: F. F. Dawley, E. A. Velde, D. V. Getty, James Cockfield and Oscar Solomon.

The Heer Engine Co., Portsmouth, O., whose incorporation was recently noted, advises that it intends to manufacture two-cylinder opposed engines, from 10 to 40 horsepower, suitable for all purposes where heavy-duty engines are required, either portable or stationary.

The Century Cutlery Co., of Milwaukee, has been organized by Fred C. Pritzlaff, H. August Luedke, Franz Wolleager and Charles G. Davies, all connected in official capacities with the John Pritzlaff Hardware Co., one of the largest wholesale hardware concerns in the west.

The Racine Foundry Co., Racine, Wis., whose incorporation for $40,000 was recently noted, has commenced operating, having leased temporarily the old Chalmers foundry. While iron and brass castings will be made, it is the intention of the company to specialize in the manufacture of aluminum products.

The American Valve & Meter Co., of Cincinnati, with a capital stock of $230,000, has been incorporated by Wallace M. Gray, Dwight S. Marfield, Harry Pounsford, C. A. Culbertson, D. T. Price and Anthony Eisen. The company plans to build railroad equipment such as tanks for water supplies for locomotives, etc.

At the meeting of the stockholders of the Connellsville Machine & Car Co., Connellsville, Pa., the following directors

were chosen: James McGrath, W. E. Crow, J. W. Ralston, W. F. Soisson, Dr. L. P. McCormick and F. N. Sherrick. The directors in turn re-elected the following officers: President, James McGrath; vice president, Charles Davidson; secretary and treasurer, J. W. Ralston.

The Gear Grinding Machine Co., Detroit, will occupy a building which is now being erected, and expects to put its product on the market by Feb. 1. The company will grind gears true to form, manufacture hardened gears for automobiles, and will also manufacture the Ward gear grinder, of which Fred A. Ward is patentee. The officers of the company are: President, George P. Codd; vice president, Fred A. Ward; secretary-treasurer, N. C. Banks, and assistant secretary, Lawrence Moore.

At a meeting of the directors of the Harrison Machine Works, Belleville, Ill., the following officers were elected: President, Cyrus Thompson; vice president, George A. Harvey; secretary, William A. Thompson, and treasurer, Lee Harrison. The Harrison Machine Works was established in 1848, and has been in continued operation ever since, except for brief periods when repairs were necessary. An addition is now being made to the foundry, and officers say that prospects for 1910 are good.

The Bucyrus Foundry Co., Bucyrus, O., respecting its incorporation recently noted, advises that its capital stock is $50,000, and that it has elected the following officers: President, John Shunk; secretary, D. F. Baumgartner; treasurer, F. E. Donnewirth Jr., and vice president and general manager, C L. Morkel. It has taken over the plant of the Ashland Iron Works Co., of Ashland, O., which makes a specialty of gray iron castings, with a capacity of 18 tons per day. It has a fully equipped foundry, and is in a position at this time to turn out work.

Alfred E. Norton Co., New York City, iron and steel construction, advises that while its plant at Boonton, N. J., was seriously damaged by fire, Dec. 9, it is running a temporary shop and is now fabricating in that shop. It has purchased the necessary new machinery and has made a satisfactory adjustment after the fire loss. The permanent plant will not be erected until the warm weather opens, at an estimated cost of $75,000. Its capital stock has been increased from $100,000 to $200,000, and the stock has been entirely subscribed. The company will continue the general fabricating and erecting of structural iron and steel along the same lines and following the same policy which it has pursued in the past four years.

The Prime Steel Co., Milwaukee, Wis., referring to its increase in capital stock from $50,000 to $350,000, advises that this was done to provide for the purchase of the Dutcher Steel Casting Co., of Milwaukee. Of the increased capital $250,000 has been paid in. The plant of the Dutcher Steel Casting Co. is now known as the Dutcher works of the Prime Steel Co. The Prime Steel Co. purposes to add practically 200 feet to its main foundry, installing another 20-ton open-hearth furnace, construct a large core room and add other improvements to the plant. The original plant of the Prime Steel Co. will be known as the Crucible works of the Prime Steel Co. The officers are: President, O. L. Prime; vice president, S. W. Prime; second vice president, John H. Tobin; secretary and treasurer, C. J. Wild; assistant secretary and treasurer, F. M. Machell.

The Hanna-Brackenridge Co., Fort Wayne, Ind., engines, boilers, woodworking machinery, etc., advises respecting projected plans that on account of greatly increased business it has been compelled to purchase a new plant in Fort Wayne, which was originally used by the Clark Fixture Co. The main building is 60 x 250 feet, two stories, of brick construction, with a separate office building, 30 x 60 feet, two stories, fireproof. The main building has two ells, including a foundry, blacksmith shop, engine and boiler room, and a separate building for storage purposes is being erected, 60 x 200 feet, one story. In addition to the ground covered by the buildings, the company has 2½ acres, which will give ample room for enlarging its plant. With a large stock of rebuilt woodworking machinery, and with its new and modernly equipped plant, the Hanna-Brackenridge Co. finds itself placed in an enviable position respecting new business for the coming year.

Trade Notes:—

The Canton Art Metal Mfg. Co., Canton, O., has leased for its eastern agents the ground floor of No. 39 Liberty street, New York, in a new 12-story building.

The Bruce-Macbeth Engine Co., Cleveland, builder of two and four-cylinder vertical gas engines, has found it necessary because of rapidly increasing business to open a branch office in Philadelphia, at No. 1020 Drexel building. The office will be in charge of M. E. Jackson.

Zaremba Co., Philadelphia, manufacturer of evaporators and chemical machinery, announces the removal of its engineering department and eastern offices from Philadelphia to 1004 Ellicott Square, Buffalo. All communications after Dec. 24 will be received at the new office at Buffalo.

Fires:—

The office and storage building of the McWane Pipe Works, Lynchburg, Va., were damaged, Jan. 1, the loss being estimated at $20,000, of which the larger part was on stock.

The plant of the Boggis Stove Foundry Co., Huntington, W. Va., was damaged, Dec. 30, the loss being placed at $8,000, partly covered by insurance.

The plant of the Link-Belt Supply Co., Minneapolis, suffered a loss of about $10,000, Dec. 28.

The Milwaukee plant of the American Bridge Co. was damaged, Jan. 3, when four firemen were killed. The loss is estimated at $150,000, the insurance being carried by the company itself.

The Canadian Iron & Foundry Co., Montreal, was damaged, Dec. 3, to the extent of about $25,000.

The Star Boiler Works, Clinton, Ia., sustained a loss estimated at $4,000, Dec. 21, the loss being fully covered by insurance.

The ship building plant of the T. S. Marvel Co., Newburgh, N. Y., was damaged by fire to the extent of $75,000, Dec. 22. The engine and boiler house, saw mill and foundry were among the departments destroyed.

The forge and blacksmith departments of the Titusville Forge Works, Titusville, Pa., were seriously damaged by fire Dec. 29 with a loss of about $45,000, practically all covered by insurance.

The 16 and 18-inch mills, the machine and pipe shops of the Valley plant of the Republic Iron & Steel Co., at Youngstown, O., were badly damaged, and the 7-inch mill slightly damaged, Jan. 7. The three mills will be repaired and made ready to run this week. The fire threatened other portions of the plant, the fire department being called out with a general alarm. No estimate of the loss can be made at this time, nor has the cause of the fire been ascertained.